A taxonomic revision of *Actephila* Blume (Euphorbiaceae/Phyllanthaceae) in Australia

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Summary

Forster, P.I. (2005). A taxonomic revision of *Actephila* Blume (Euphorbiaceae/Phyllanthaceae) in Australia. *Austrobaileya* 7(1): 57–98. The genus *Actephila* Blume is revised for Australia. Fourteen native and endemic species (one with two subspecies) are recognised: *A. bella* P.I.Forst. sp. nov., *A. championiae* P.I.Forst. sp. nov., *A. flavescens* P.I.Forst. sp. nov., *A. foetida* Domin, *A. grandifolia* (Müll.Arg.) Baill., *A. latifolia* Benth., *A. lindleyi* (Steud.) Airy Shaw, *A. longipedicellata* P.I.Forst., *A. petiolaris* Benth subsp. *petiolaris, A. petiolaris* subsp. *jagonis* P.I.Forst. subsp. nov., *A. plicata* P.I.Forst. sp. nov., *A. sessilifolia* Benth., *A. traceyi* P.I.Forst. sp. nov., *A. venusta* P.I.Forst. sp. nov., and *A. vernicosa* P.I.Forst. sp. nov. An identification key to species is provided. All taxa are described and most species illustrated. Notes are provided on distribution, habitat, typification, affinities and conservation status for each taxon.

Key Words: Euphorbiaceae, Phyllanthaceae, Australian flora, *Actephila bella, Actephila flavescens, Actephila grandifolia, Actephila longipedicellata, Actephila petiolaris* subsp. *jagonis, Actephila plicata, Actephila traceyi, Actephila venusta, Actephila vernicosa*

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Introduction

The genus *Actephila* was described by Blume (1825) who did not include any species at the time. The first species to be included in *Actephila* were *A. bantamensis* Miq. (now a synonym of *A. javanica* Miq.) and *A. javanica* (Miquel 1859), although other species were described prior to this date in other genera and are now included in *Actephila* (e.g. Dalzell (1851) with *Anomospermum excelsum* (now *Actephila excelsa* (Dalzell) Müll.Arg.) and Steudel (1841) with *Lithoxylon lindleyi* (now *A. lindleyi* (Steud.) Airy Shaw). Numerous species were described between 1865 and 1978 and there are currently around 20 species of *Actephila* recognised worldwide from Australia, China, India, Indonesia, Malaysia, New Guinea, India, Laos, Sri Lanka, Solomon Islands, Thailand and Vietnam (Airy Shaw 1980a, 1981; Philcox 1997; Govaerts *et al.* 2000; Chayamarit in press; Li & Hoffmann in press). Most authors consider that the species level systematics of the genus is difficult (Govaerts *et al.* 2000; Radcliffe-Smith 2001) and it is likely that the number of species in the genus will increase once the Malesian species are revised.

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Although the traditional taxonomic placement of *Actephila* in Euphorbiaceae subfamily *Phyllanthoideae* (or family Phyllanthaceae) has not been challenged recently, it remains to be rigorously tested using molecular data and additional information from the areas of anatomy (particularly seeds), chemistry and embryology. An initial classification of Euphorbiaceae *s.l.* by Müller (1866) placed the genus together with *Amanoa* Aubl., *Cluytiandra* Müll.Arg., *Cyathogyne* Müll.Arg., *Discocarpus* Klotzsch, *Lachnostylis* Turcz., *Moacurra* Roxb., *Payeria* Baill., *Pentabrachion* Müll.Arg., *Savia* Willd. and *Secretania* Müll.Arg., in the tribe *Phyllantheae* Müll.Arg. subtribe *Savieae* Müll.Arg. Pax & Hoffman (1922, 1931) included *Actephila* in the subfamily *Phyllanthoideae* Ascherson, subtribe *Amanoinae* Pax & K.Hoffm., together with *Amanoa*. Webster (1994) included the genus in the subfamily *Phyllanthoideae*, tribe *Wielandieae* Baill. ex Hurus., together with the genera *Blotia* Leandri, *Chonocentrum* Pierre ex Pax & K.Hoffm., *Discocarpus*, *Gonatogyne* Müll.Arg., *Heywoodia* Sim, *Lachnostylis, Savia* and *Wielandia* Baill., but made no definitive statement on the closeness of any of these genera to *Actephila*. A similar disposition of genera within this tribe was outlined by

Radcliffe-Smith (2001), with the addition of the genera *Chonocentrum* Pierre ex Pax & K.Hoffm. and *Petalodiscus* (Baill.) Pax. In both of these recent, morphologically based overviews, *Actephila* was keyed out next to *Blotia*, a genus from Madagascar. Most recently it has been proposed that the subfamily *Phyllanthoideae* be again recognised at family level as the Phyllanthaceae (Chase *et al.* 2001; APG 2003). Limited molecular analysis of genera placed in the Phyllanthaceae has revealed that *Actephila* is allied to the genera *Andrachne* L., *Leptopus* Decne., *Meineckia* Baill., *Poranthera* Rudge and *Zimmermannia* Pax, with the closest relationship to *Andrachne* and *Leptopus* (Wurdack *et al.* 2004; Samuel *et al.* 2005).

As with many genera of Euphorbiaceae *s.l.*, *Actephila* remains poorly studied in terms of its anatomy, chemistry or micromorphology. The available taxonomic classifications of the genus are based mainly on gross morphology and it is likely that further molecular analysis will reveal patterns of relationship to other genera in Phyllanthaceae that are different again to those recently proposed. On the basis of wood anatomy of a single species of *Actephila* (*A. javanica*), Mennega (1987) considered that the genus was close to *Pentabrachium*. Levin (1986a-c) studied leaf architecture and epidermal morphology of two species of *Actephila* and concluded that they were most similar to those from the genus *Andrachne* L. Tokuoka & Tobe (2001) described the seed coat anatomy of two species of *Actephila* from Asia as exotegmic and the cells of the exotegmen as stellate-undulate. A similar seed coat anatomy was found in two species of *Savia* and led these authors to speculate that the two genera may be closely related. They further stated that the "Wielandieae are morphologically unlikely to be monophyletic". The lack of endosperm in the seeds of *Actephila, Amanoa, Spondianthus* and *Wielandia* was considered primitive within the group (Tokuoka & Tobe 1995).

Species Delimitation

The morphological or phenetic species concept used, has been implicit in previous revisions of Australian Euphorbiaceae *s.l.* (Forster 1994a-d, 1995a,b, 1996a,b, 1997a,b, 1999a,b, 2003). This species concept is closely tied to habitat preferences and geographic distribution and is arrived at from extensive fieldwork in northern Australia, particularly Queensland where all of the Australian species are found.

Species are defined as groups of populations (1-many) with discontinuities in the variation of two or more independent character states of morphology. It is assumed that there is genetic continuity or at least a shared ancestral lineage between the different populations of a single species. Although species definitions remain a matter of opinion and debate, the one applied here ('phenetic species concept') is widely used and understood (Stebbins 1950; van Steenis 1957; Cronquist 1988; Stuessy 1990; Levin 1979, 2000) and would also equate to the 'diagnostic species concept' of Judd *et al.* (2002).

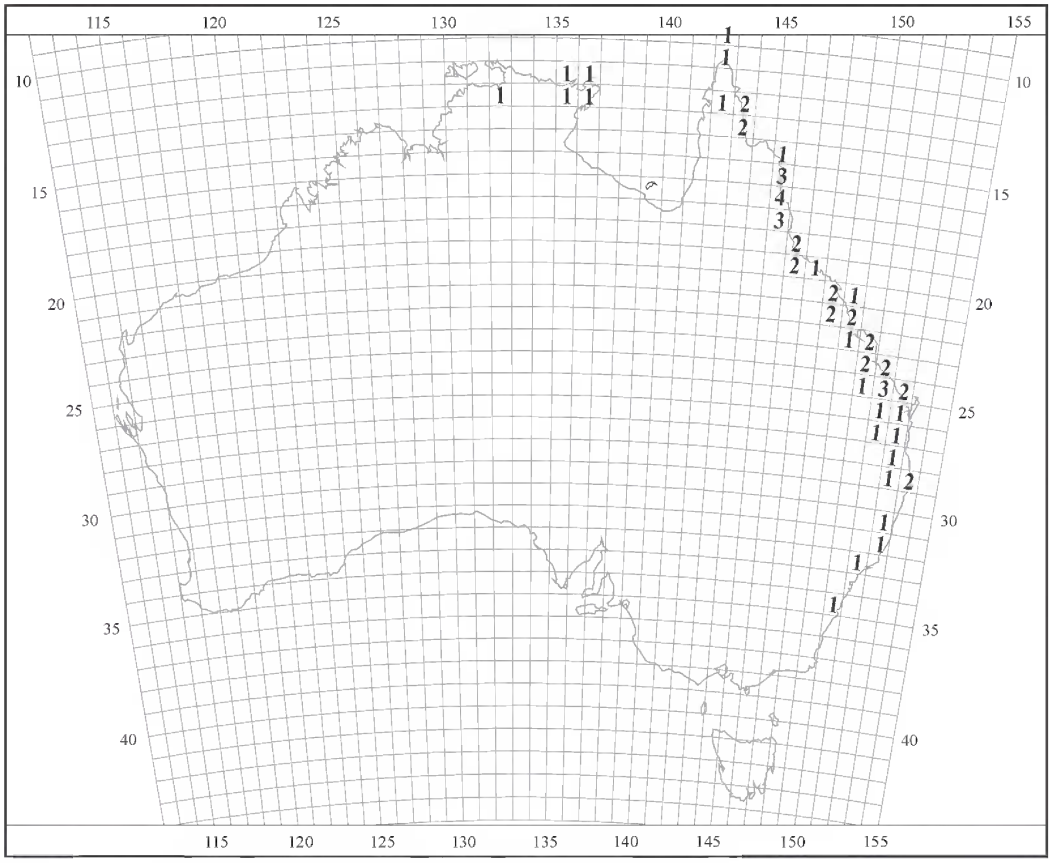
If only a single, or several minor (indumentum colour or density) character state differences are present and the discontinuity is geographically based, the rank of subspecies is used. It is generally considered that subspecies should differ in only a few minor characters and that intermediate populations should exist to demonstrate continuity of character states (e.g. Stebbins (1950) states "subspecies.... connected .... by a series of intergrading forms" or Stace (1989) states "a population of several biotypes forming a more or less distinct regional facies of a species ..... a geographical race, ecotype, topodeme or genoecodeme").

Australian species of *Actephila* are the only euphorbs *s.l.* occurring in rainforests to have been examined by electrophoretic methods, *viz.* isozyme analysis (Shapcott 1998). That work examined a small number of populations from the species *A. grandifolia, A. lindleyi* and *A. vernicosa* and although it revealed variation, the sampling was insufficient to draw wider conclusions. Electrophoretic data is variable in its usefulness in distinguishing specific taxa in other plant groups (e.g. cycads: Sharma *et al.* 1998, 1999, 2004). Morphologically discrete species may differ little genetically (see references in Sharma *et al.* 1998) and the application of isozymes to taxonomic decisions is limited as speciation can occur without divergence at enzyme loci or

divergence in allozyme loci can occur without speciation (Crawford 1989). The conserved nature of allozyme variation responsible for these apparently low levels of variation (Bossart & Prowell 1998) may not be reflected in results from more informative molecular techniques such as amplified fragment length polymorphisms (AFLP), microsatellites (ITS) or inter-simple sequence repeats (ISSR).

The delimitation of species for this genus in Australia has been difficult, as considerable variation occurs for each taxon, nearly all of which are known from a range of disjunct populations in eastern and northern parts of the continent (**Map 1**). Fertile material can be hard to obtain, and unless care is taken, most flowers are lost from dried specimens as they often abscise during the drying process. This has resulted in a limited sampling of floral diversity from the available herbarium collections. Despite this, all of the species recognised below are distinctive when encountered in habitat. The habit of the individual plant and form of the foliage changes little when the plants are cultivated. Further characters are undoubtedly to be found in the morphology of seedlings based on limited observations of cultivated plants; however, in the absence of comprehensive information of this sort it is the intention of this revision to provide a classification and identification key that can be used with vegetative adult material.

The first species to be recognised for Australia was *Actephila lindleyi* (as the misapplied name *Securinega nitida* Lindl.) in 1821 (Airy Shaw 1971). Further species were added by Mueller (1865) and Baillon (1866a), although these were considered conspecific with *A. lindleyi* by Airy Shaw (1971). The basic classification framework for Australian species



Map 1. Distribution of *Actephila* in Australia within 1° grids and species diversity.

was established by Bentham (1873) who named *A. latifolia*, *A. petiolaris* and *A. sessilifolia*, as well as recognising *A. lindleyi* (as *A. nitida*). Over 100 years later little had changed with Airy Shaw (1980b, 1980c, 1981) recognising five species, *A. foetida* Domin, *A. latifolia*, *A. lindleyi*, *A. petiolaris* and *A. sessilifolia* for the genus in Australia.

The current revision represents a major departure from the long-accepted status quo of species diversity in the Australian species of *Actephila*, with the number of species more than doubled. This has been due to a number of factors, most notably the considerable accumulation of herbarium material (together with supporting spirit collections) during the 1980's and 1990's from previously known populations, and secondly continued botanical exploration of the rainforests of Australia that has resulted in the discovery of new populations and undescribed taxa. The presence of several of these undescribed species has been indicated in the allozyme study of Shapcott (1998) for a small number of species (*A. grandifolia*, *A. lindleyi*, *A. vernicosa* of this account), census accounts of the flora of Queensland (Forster & Henderson 1997; Forster & Halford 2002), and identification manuals to rainforest plants (Hyland *et al.* 1999, 2003; Cooper & Cooper 2004).

Reproductive Ecology

Ecology of *Actephila* species has been barely studied and little more than circumstantial and anecdotal information is available on their reproduction, pollination, dispersal and recruitment. Floyd (1989) stated that *A. lindleyi* fruit were "eaten by [the] brown cuckoo-dove" and that "cuttings strike easily". All of the Australian species of *Actephila* comprise small trees, shrubs or subshrubs and occur in rainforest (mature phase) communities in New South Wales, the Northern Territory and Queensland. Plants tend to mass flower following rain between October and December. Flowering is often associated with the production of new leaves and the shape and colour of these unhardened leaves is often quite different to the mature leaves that are present by the time of fruiting. This pattern of floral and vegetative phenology is similar to other species of Euphorbiaceae and Putranjivaceae that occur in these habitats, e.g. *Croton* (Forster 2003), *Drypetes* (Forster 1997b) or *Mallotus* (Forster 1999b).

The Australian species of *Actephila* are monoecious, a trait commonly associated with Euphorbiaceae *s.l.* in this region (Gross 2005). The flowers are clustered in small axillary fascicles with staminate flowers usually greatly outnumbering pistillate ones, but there is no spatial or temporal separation of the sexes as is found in species of *Croton* (Forster 2003) or *Mallotus* (Forster 1999b). In *Actephila* it is not unusual to observe individuals with inflorescences where the flowers are all of one sex (usually male), particularly if the plants are recovering from a period of stress (usually drought); however it is uncertain whether this indicates evolution of androdioecy, "the presence of male-only and hermaphroditic plants in a population" (Charlesworth 1984; Thomson *et al.* 1989) without quantitative observations. An alternative explanation is that *Actephila* plants may be gender diphasic, i.e. the plants 'change sex' (Lloyd 1982; Korpelainen 1998; Richardson & Clay 2001), with many of the 'male' plants later having both male and female flowers.

Pollinators of *Actephila* are undocumented, but the shallow, bowl-like flowers are perhaps most suited to generalist insect pollinators with short proboscises (Endress 1994), as has been found in *Drypetes* (Forster 1997b) (Euphorbiaceae/Putrajivaceae) by Williams & Adam (1997) or postulated for *Croton* (Forster 2003). The presence of foetid smelling flowers in species such as *Actephila foetida* and *A. traceyi* may indicate that flies are the primary pollinators and this group of insects are sometimes the only pollinators in dioecious species (Bawa 1980; Charlesworth 1993; Renner & Feil 1993). Although the possibility of wind pollination (Williams & Adam 1999) cannot be discounted without experimentation, it is perhaps less likely due to the occurrence of *Actephila* populations in the rainforest understorey where wind speed is greatly reduced (Turner 2001).

Plants of *Actephila* when cultivated in areas well removed from their natural habitats still produce fruit with fertile seed (R. Jensen, G. Sankowsky, M.C. Tucker, pers. comm. 2004) and this has been interpreted as indicating that generalist pollination by opportunistic insects is occurring (Tucker & Simmons 2004). The possibility of apomixis or agamospermy (i.e. "the development of seeds without preceeding fertilization"), as found for the euphorbiaceous *Alchornea ilicifolia* (Smith 1841; Baillon 1866c; Endress 1994; Bicknell & Koltunow 2004) is more likely, but needs to be experimentally confirmed. Agamospermous reproduction may also explain the apparent morphological uniformity of plants within any given population of *Actephila* resulting from long-term recruitment of genetically similar individuals.

Pistillate flowers are often persistent on the plant with both the pedicels and floral parts increasing in size until the perianth (especially the petals) withers and the fruit develops. At what stage these flowers cease to be functionally receptive to pollination and should be regarded as developing fruit is uncertain and a somewhat arbitrary distinction in the morphological descriptions has been made based on persistence of the petals. Esser (2003) considered that the genus *Actephila* was characterised by autochorous/diplochorous fruit dehiscence and dispersal, whereby the fruits are ballistically explosive (ballistochores, *viz.* Turner 2001), followed by myrmechory.

The seeds of *Actephila* have highly reduced or no caruncles present, so once they have been explosively ejected could be dispersed by ants that move the seeds as a result of being attracted to a food reward. These caruncles are significantly smaller (percentage of the seed volume) than those found in other Australian Euphorbiaceae *s.l.* such as *Acalypha* L. (Forster 1994b), *Austrobuxus* Miq. (Forster 1997a), *Bertya* Planch. (Halford & Henderson 2002a), *Croton* L. (Forster 2003), *Dissiliaria* F.Muell. ex Baill. (Forster 1996b), *Micrantheum* Desf. (Berg 1975), *Monotaxis* Brongn. (Halford & Henderson 2002b), *Petalostigma* F.Muell. (Forster & van Welzen 1999), *Pseudanthus* Sieber ex Spreng. (Halford & Henderson 2003), *Sankowskya* P.I.Forst. (Forster 1995a), *Stachystemon* Planch. (Halford & Henderson 2003) and *Wyanbeelia* Airy Shaw & B.Hyland (Forster unpubl.) and their use as a food source by invertebrates has yet to be observed. Species with this dispersal pattern are unlikely to have regular, long-distance dispersal, i.e. greater than 100 m from the parent (Cain *et al.* 1999) and most seeds of rainforest trees fall within 10 m of the parent plant (Turner 2001). This dispersal pattern usually results in a markedly clumped disposition of individuals, especially for species that inhabit the understorey and midstratum of rainforests, but has only been quantitatively documented for *A. lindleyi* at one locality in south-eastern Queensland (Butler 2004). In species such as *A. bella, A. championiae, A. latifolia, A. petiolaris, A. plicata, A. sessilifolia* and *A. vernicosa*, the boundaries of populations are often sharp, indicating "dispersal limited distribution" (Primack & Miao 1992). In comparison species such as *A. grandifolia*, *A. lindleyi* and *A. venusta* do not always have such a 'sharp' boundary to populations, and although individuals are clumped, they are generally more widely scattered within rainforest patches.

Australian Distribution and Diversity

Australia is the major centre of diversity for *Actephila* with at least fourteen endemic species. There are collectively fewer species combined in the other regions where the genus has been found. The Australian species are also the most morphologically diverse with the observed variation mainly that of leaf morphology and foliage indumentum. The most distinctive species in the whole genus is undoubtedly *A. foetida* with its massive leaves and foliage indumentum. Toothed leaves, as found in *A. excelsa* from Malesia, have not been observed in the Australian species.

As yet no infrageneric phylogeny has been proposed for *Actephila*; however, obvious morphological groupings of the Australian species are (1) *A. bella, A. foetida, A. petiolaris*, (2) *A. flavescens, A. grandifolia, A. lindleyi, A. traceyi, A. venusta, A. vernicosa*, (3) *A. championiae, A. latifolia, A. plicata*, (4) *A. longipedicellata, A. sessilifolia*. These informal groupings are based on morphological similarities in leaf and fruit morphology. Similar appearing, yet distinct, species occur in New

Guinea and elsewhere; however my knowledge of these taxa is insufficient to suggest further groupings throughout the genus range.

Species of *Actephila* are restricted to rainforests in eastern and northern Australia (**Map 1**), although they are absent from the Kimberley of Western Australia and are found south only to central New South Wales. Species sympatry is rarely encountered with the only instances I am familiar with being (1) *A. lindleyi* – *A. sessilifolia* at Bundaberg) and (2) *A. plicata* – *A. sessilifolia* at Mt Dryander near Proserpine. Hence the current day distribution pattern of species, especially within rainforests of similar structure and floristic composition, is essentially allopatric. This is strictly the case for the species within each of the groups outlined above with the geographic disjunctions ranging from nearby (e.g. *A. championiae* – *A. plicata*; *A. foetida* – *A. petiolaris*; *A. grandifolia* – *A. lindleyi*; *A. traceyi* – *A. venusta*) to far flung (e.g. *A. bella* – *A. petiolaris*; *A. flavescens* – *A. lindleyi*; *A. longipedicellata* – *A. sessilifolia*).

While there are minor centres of species diversity in Australian *Actephila*, i.e. three grid cells in the 'Wet Tropics' and one grid cell near Miriamvale with three or four species each (**Map 1**), there is no overall similarity with the patterns of species distribution and diversity found in the Australian taxa of *Croton* L. with many more species (Forster 2003) or *Mallotus* Lour. that has a similar number of species (Forster 1999b).

Materials and Methods

This revision is based on herbarium holdings at BRI, CANB (including CBG), DNA, MEL, NSW and QRS, photographs or microfiche of types at G-DC, K, L, P and U, and field collections and observations of all taxa by the author. Representative material (including types) of *Actephila* species from New Guinea and Indonesia were examined at BRI, CANB, L and QRS.

Most species of *Actephila* remain poorly collected, and the descriptions for most of the species in this revision are based on few fertile collections. Floral descriptions are incomplete for *A. bella, A. flavescens, A. petiolaris* subsp. *jagonis* and *A. plicata*. Collectors should ensure that both male and female flowers are obtained when making specimens of *Actephila*. It is not unusual to encounter mass flowering individuals of *Actephila*; however, most flowers are lost from specimens when the material is handled and dried. If spirit for flower/fruit pickling is available for use in the field, then flowers or fruit should be immediately pickled. Male flowers usually greatly outnumber females giving the impression that the plants are dioecious, but careful searching will usually result in location of material of both sexes.

Floral descriptions were prepared from material preserved in spirit (FAA or 70% alcohol and glycerol) or reconstituted by boiling in water and detergent. Fruit descriptions were prepared from spirit and dried material. Foliage, inflorescence and seed descriptions were prepared from dried material.

The degree of leaf margin recurving is useful in specific delimitation and distinctions have been made between 'flat' (the leaf lamina margin is in the same plane as the rest of the leaf lamina), 'recurved' (the leaf lamina margin is curved in a plane 0-90° to the plane of the leaf lamina) and 'revolute' (the leaf lamina margin is curved in a plane 90-180° to the plane of the leaf lamina). Venation terminology largely follows Hickey (1973) and Ash *et al.* (1999) with the recognition of a midrib (1° vein order), lateral veins (2° vein order) and intercostal veins (3° and onwards vein orders) within any leaf lamina. When an intercostal vein comprises a continuous raised line of cells it is termed 'distinct'; if it is discontinuous or fades away into the body of the lamina, it is termed 'indistinct'. Indumentum cover is described using the terminology of Hewson (1988), except that 'scattered' is used instead of 'isolated'. The shapes of leaves, sepals and petals are described using the terminology of Hickey & King (2000).

Characters most commonly used in the identification key are those of indumentum cover, leaf lamina venation (especially vein order number and its expression) and leaf lamina margin form, colour of foliage parts (based on dried material), flowers (particularly disk form and size, sepal and petal shape and size). Use

of non-vegetative characters in the couplets has been avoided in most cases but is necessary to distinguish several species towards the end of the key.

Common abbreviations in the specimen citations are N.P. or N.P.R. (National Park or National Park Reserve), L.A. (Logging Area), F.R., S.F. or S.F.R. (Forest Reserve, State Forest or State Forest Reserve), T.R. (Timber Reserve) and V.C.L. (Vacant Crown Land).

NCA is an abbreviation for the Queensland Nature Conservation Act (1992) and its associated schedules. Discussions of conservation rankings are made using the criteria of the IUCN (2001).

Rainforest structural terminology follows Webb (1978). The 'Wet Tropics' is defined as that area of north-eastern Queensland which encompasses the 'hot, humid vine forests' from near Cooktown in the north to Paluma in the south (Webb & Tracey 1981), and is equivalent to the bioregion of the same name (Goosem *et al.* 1999). For the purposes of the key, 'Central Qld' comprises the pastoral districts of North Kennedy, South Kennedy and Port Curtis; 'Southern Qld' comprises the pastoral districts of Burnett, Darling Downs, Moreton and Wide Bay; 'Cape York Peninsula' is that part of Queensland north of the 'Wet Tropics'.

Taxa are arranged alphabetically. Suggested affinities between taxa are indicated in the ***Notes*** section for each taxon.

Taxonomy

Actephila Blume, *Bijdr. Fl. Ned. Ind.* 581 (1825).

Savia section *Actephila* (Blume) Baill., *Étude Euphorb.* 571 (1858). **Type species:** *Actephila javanica* Miq.

Lithoxylon Endl., *Gen. Pl.* 2: 1122 (1840). **Type species:** *Securinega nitida* Lindley (*non* Willd. 1806).

Anomospermum Dalz., *Hook. J. Bot. Kew Gard. Misc.* 3: 228 (1851) (*non* Miers 1851). **Type species:** *Anomospermum excelsum* Dalz. [= *Actephila excelsa* (Dalz.) Muell.Arg.]

Perennial trees, shrubs or subshrubs, monoecious, evergreen; stems and foliage without latex. Indumentum of simple trichomes; scales, glandular trichomes and stinging trichomes absent. Stipules entire, generally inconspicuous, deciduous. Leaves alternate, subverticillate or subopposite, coriaceous or chartaceous, flat to plicate, ± sessile to petiolate, simple and elobate, penninerved, entire or toothed, glands absent. Inflorescences fasciculate, axillary, extra-axillary or rarely on short brachyblasts, or solitary, uni- or bisexual, with flowers in bracteate groups. Male flowers pedicellate; calyx lobes 4–6, imbricate, ± equal; petals 2–6, often scale-like or absent; disk extra-staminal, annular, 4–5 lobed, or entire and rounded; stamens 3–6, inserted on the disk, filaments free, filiform; anthers introrse, bilobate, thecae oblong and longitudinally dehiscent; pistillode trifid. Female flowers pedicellate; calyx lobes 4–6, imbricate; petals 2–6, usually often scale-like or absent; disk annular or cupular, fleshy; ovary 3-locular, locules biovulate; styles free or shortly connate at base, entire or bifid. Fruits capsular, trilobate to pentalobate, surface rough, glabrous or pubescent, dehiscing loculicidally and partly septicidally into bivalved cocci; columella persistent. Seeds deltoid; testa crustaceous; albumen absent; caruncles absent or present; cotyledons thick, sometimes plicate.

Between twenty-five and thirty species in Asia, Australia, Malesia and Melanesia. Fourteen species in Australia, all endemic.

***Derivation of name*:** *akte* (seashore) and *phileo* (to love).

Key to Australian species of *Actephila*

1. Leaf lamina chartaceous (thin) . . . 2
   Leaf lamina coriaceous (thick, leathery) . . . 3
2. Branchlets with dense indumentum when young; leaf petioles18–78 mm long, dark olive-green when dry. . . . **4. A. foetida**
   Branchlets glabrous when young; leaf petioles 3–8 mm long, black-green when dry . . . **14. A. vernicosa**
3. Leaf lamina with up to 4 or 5° vein orders distinct . . . 4
   Leaf lamina with up to 3° vein orders distinct (rarely 4° in *A. lindleyi*) . . . 5
4. Leaf petiole length 2–8 mm long; lamina length/petiole length ratio 13.6–42.5 (Cape York Peninsula) . . . **8. A. longipedicellata**
   Leaf petiole length 9–80 mm long; lamina length/petiole length ratio 2–8.7 (Wet Tropics) . . . **9. A. petiolaris**
5. Leaf lamina with up to 2° vein orders distinct . . . 6
   Leaf lamina with up to 3° vein orders distinct (rarely 4° in *A. lindleyi*) . . . 9
6. Leaf margin flat to slightly recurved . . . 7
   Leaf margin revolute . . . 8
7. Leaf petiole cream when dried; lamina base obtuse or rounded (rarely subcordate) (Central Qld) . . . **1. A. bella**
   Leaf petiole olive-green when dried; lamina base acute (rarely rounded) (Cape York Peninsula, Northern Territory) . . . **13. A. venusta**
8. Leaf petiole length 10–44 mm long, green-yellow when dried; lamina base acute or rounded (rarely weakly cordate) . . . **2. A. championiae**
   Leaf petiole length 1–7 mm long, grey-fawn when dried; lamina base cordate to subcordate, often appearing stem-clasping . . . **11. A. sessilifolia**
9. Leaf margin revolute . . . 10
   Leaf margin flat to recurved (rarely revolute in *A. lindleyi*) . . . 11
10. Branchlets cream when dry; leaf petioles cream-yellow when dry; fruit rounded (Wet Tropics) . . . **3. A. flavescens**
    Branchlets brown when dry; leaf petioles olive-green when dry; fruit pentalobate (Central Qld) . . . **10. A. plicata**
11. Midrib of leaf lamina below prominently raised at lamina base (height > width) then decreasing towards apex (Wet Tropics) . . . **6. A. latifolia**
    Midrib of leaf lamina below strongly raised at lamina base (height < or ± equal to width) then decreasing towards apex (Cape York Peninsula, Central and Southern Qld, NSW) . . . 12
12. Male flower sepals 3.5–5 mm long, disk 5-angled; fruit 16–24 mm diameter (Cape York Peninsula) . . . **12. A. traceyi**
    Male flower sepals 1–3.5 mm long, disk annular or rounded; fruit 11–15 mm diameter (Central and Southern Qld, NSW) . . . 13
13. Abaxial leaf surface pale green and matt-glaucous, often drying brown; male flower pedicels 10–20 mm long, petals 1.4–1.5 × 0.5–0.7 mm . . . **5. A. grandifolia**
    Abaxial leaf surface pale green-yellow and glossy, often drying pale brown; male flower pedicels 1.5–5 mm long, petals 2–2.5 × 0.8–1.3 mm . . . **7. A. lindleyi**

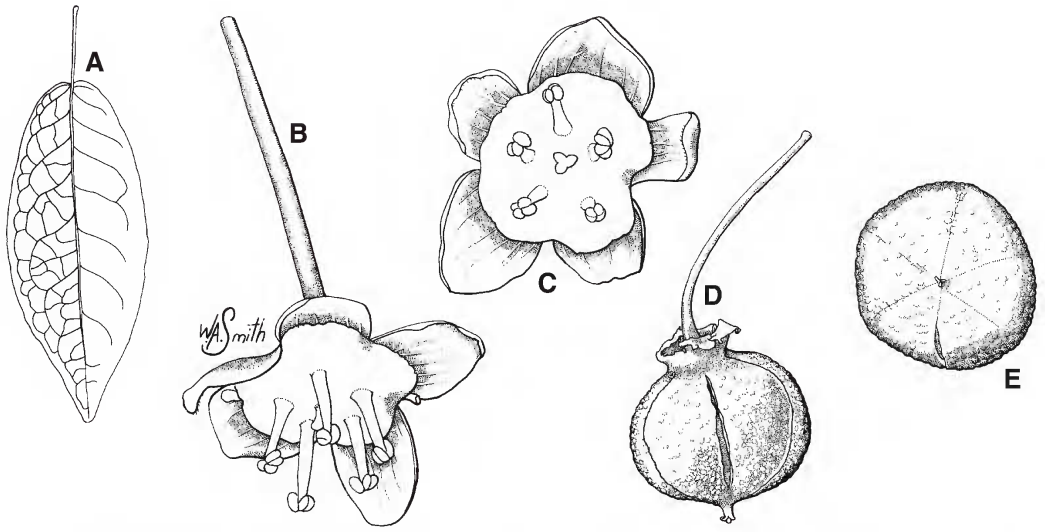


Fig. 1. ***Actephila bella.*** A. abaxial leaf surface ×1. B. side view of male flower ×6. C. face view of male flower ×6. D. side view of fruit ×4. E. face view of fruit ×4. A, D, E from *Forster PIF5859* (BRI); B, C from 27 Jan. 2004, *Tucker s.n.* (BRI). Del. W. Smith.

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1. Actephila bella P.I.Forst., **sp. nov.** Ab *A. petiolari* Benth. petiolo folii cremea (versus adversum olivaceam), venis paginae abaxialis folii usque ad tantum ordine 1–2 (adversum ordines 1–4) distinguibilibus, floribus masculis pedicellis longis (13–15 × *c.* 0.8 mm) filiformibus (adversum pedicellos breves validos (3–7 × 0.6–0.8)), petalis oblongis et longioribus (2.5–3 × 0.4–0.7 mm) (non petala oblanceolata et breviora (1.8–2.5 × 0.5–1.2 mm) et disco majore (6–7.5 mm diam. adversum 3.5–6 mm diam.) differt.

Typus: Queensland. Port Curtis District: Bulburin State Forest (S.F. 67 Bulburin), *c.* 400 m NW of junction of Granite & Boobook Creeks, 24° 32'S, 151° 30'E, 17 April 1980, *W.J. McDonald 3260, W.J. Fisher & P. Ryan* (holo: BRI [2 sheets])

Actephila sp. (Granite Creek P.I.Forster PIF5859) (Forster & Henderson 1997: 70; Forster & Halford 2002: 68).

Subshrub or shrub to 3 m high. Indumentum of simple trichomes, fawn, entire plant is glabrous unless stated otherwise. Branchlets glossy, cream-fawn, sparsely lenticellate with age, glabrous or with scattered to sparse indumentum when young, glabrescent. Stipules ovate-triangular, 0.8–1.2 mm long, 0.7–1.2 mm wide, with scattered cilia. Leaves alternate, coriaceous, petiolate; petioles 3–47 mm long, 0.8–1 mm wide, cream, lenticellate, glabrous or with sparse indumentum; lamina length/petiole length ratio 2.6–18.7 (n=39); lamina elliptic-ovate, rarely obovate, ± flat, 56–145 mm long, 23–61 mm wide, length/width ratio 1.9–3.1 (n=39); base obtuse to rounded, rarely subcordate and unequal; tip acute to acuminate, rarely rounded; midrib above slightly raised (height < 5 times the width), pale green, below strongly raised at lamina base (height ± equal to width) then decreasing towards apex, pale olive-green; venation brochidodromous, comprising 10–14 lateral veins per side of midrib and intercostal reticulate veins; upper surface dark green and glossy, lateral venation visible, intercostal venation visible; lower surface pale olive-green and matt; lateral and intercostal venation prominent and slightly raised, 1° and 2° vein orders distinct, 3° and 4° vein orders indistinct, 5° and onwards vein orders obscure; margin entire, flat, pale olive-green. Inflorescence an axillary fascicle 1–1.5 mm diameter, single sex or with both male and female flowers. Male flowers: pedicels filiform, 13–15 mm long, *c.* 0.8 mm diameter; sepals 5, fused for

2.5–3 mm, lobes oblong-ovate, 2.5–3.5 mm long, 3.5–5 mm wide, glabrous or sparsely ciliate in patches towards apices; petals absent or present as one or two, oblong, 2.5–3 mm long, 0.4–0.7 mm wide; disk conspicuous, fleshy, 1.5–2 mm high, 6–7.5 mm diameter, 5-angled; stamens 3–5, filaments 2.5–3 mm long, 0.3–0.5 mm diameter, anthers 0.7–0.8 mm long, 1–1.2 mm wide. Female flowers not seen; sepals 5, oblong-ovate, *c.* 2.5 mm long, 1.8–2 mm wide; petals not seen; disk conspicuous, fleshy, *c.* 1.5 mm high, 4.5–5 mm diameter, 5-angled. Fruit: pedicels *c.* 18 mm long and 0.5 mm diameter; capsules depressed-globose to subglobose, rounded, 9–10 mm long, 12–13 mm diameter, strongly bullate, green; columella not seen. Seeds not seen. **Fig. 1.**

***Additional specimens examined*: Queensland.** Port Curtis District: SE end of Granite Creek, Bulburin S.F. 391, 24° 38'S, 151° 33'E, Oct 1989, *Forster PIF5859* (BRI, L); Bulburin Forest Reserve, Pine Creek, 24° 37'S, 151° 33'E, Jan 2004, *Forster PIF29892 & Tucker* (BRI); S.F. 67 Bulburin, Granite Creek, Jul 1978, *McDonald 2374 & Stanton* (BRI); Shoalwater Bay Training Area, *c.* 4.5 km W of Old Raspberry Vale, 22° 33'S, 150° 20'E, Sep 1993, *McDonald 5685 & Melzer* (BRI); cult. Kholo, Ipswich (ex S.F. 391 Bulburin, Pine Creek), Jan 2004, *Tucker s.n.* (BRI).

***Notes*:** *Actephila bella* shows some superficial similarities to *A. petiolaris* from nearly 5° of latitude further north, but differs from that species in the cream leaf petiole (versus olive-green), the abaxial leaf lamina surface with 1 and 2° vein orders distinct (versus 1–4° distinct); the male flowers with long (13–15 × *c.* 0.8 mm), filiform pedicels (versus short (3–7 × 0.6–0.8), stout pedicels), petals that are oblong and longer (2.5–3 × 0.4–0.7 mm) (versus petals that are oblanceolate and shorter (1.8–2.5 × 0.5–1.2 mm)) and the larger disk (6–7.5 mm diameter versus 3.5–6 mm diameter).

The floral descriptions for this species are incomplete. I have seen only two male flowers (from the Pine Creek population) and no female flowers.

***Distribution and habitat*:** *Actephila bella* is known from two 1° grid cells with populations at Shoalwater Bay and Bulburin Forest Reserve (several localities) (**Map 5**). Plants grow in the understorey of 'dry' rainforest (araucarian notophyll vineforest) on alluvium and substrates derived from andesite at altitudes between 160 and 300 m.

***Conservation status*:** *Actephila bella* is an inconspicuous plant and is likely to be overlooked by collectors. At Pine Creek (within the Bulburin Forest Reserve) this species grows in close association with the critically endangered *Macadamia jansenii* C.L.Gross & P.H.Weston. Individual numbers of the *Actephila* at this locality are not high (less than 500 plants). The number of individuals at the other two localities is not known. Further survey work is required to determine an area of occupancy and an estimation of the number of individuals; however, it is likely that the species should be listed as Endangered.

***Etymology*:** The specific epithet is formed from the Latin word *bellus* (beautiful) and refers to the flowers of this species.

2. Actephila championiae P.I.Forst., **sp. nov.** ab *A. latifoliae* Benth. differt ramulis cremeis (adversum atro-brunneos), lamina folii basi obtusa rotundata rarius infirme cordata (adversum attenuatam usque cuneatam), margine revoluto (non plano) et venis in pagina abaxiali folii usque ad tantum ordinibus 1–2 (adversum ordines 1–3) distinguibilibus, floribus foemineis petalis oblanceolatis vel oblongis vel spathulatis (non obovatis) et majoribus (3–3.2 × 1–2 mm non 1–2 × 0.5–1 mm) et discis majoribus (6–7 mm diam. adversum 3–4 mm).

Typus: Queensland. South Kennedy District: Black Mt area, 21° 36'S, 149° 10'E, 20 September 1993, *I.G. Champion 870* (holo: BRI; iso: DNA, MEL).

Actephila sp. (Koumala I.G.Champion 870) (Forster & Henderson 1997: 70; Forster & Halford 2002: 68).

Shrub or small tree to 8 m high. Indumentum of simple trichomes, uncoloured, entire plant is glabrous unless stated otherwise. Branchlets matt to slightly glossy, cream, lenticellate with age. Stipules triangular, 1.2–2 mm long, 0.8–1.3 mm wide, irregularly ciliate. Leaves alternate, rarely subverticillate, coriaceous, petiolate; petioles 10–44 mm long, 1.5–2 mm wide, green-yellow, lenticellate; lamina length/ petiole length ratio 3.6–13.2 (n=64); lamina elliptic, obovate, oblanceolate or oblong, ± flat, 65–220 mm long,

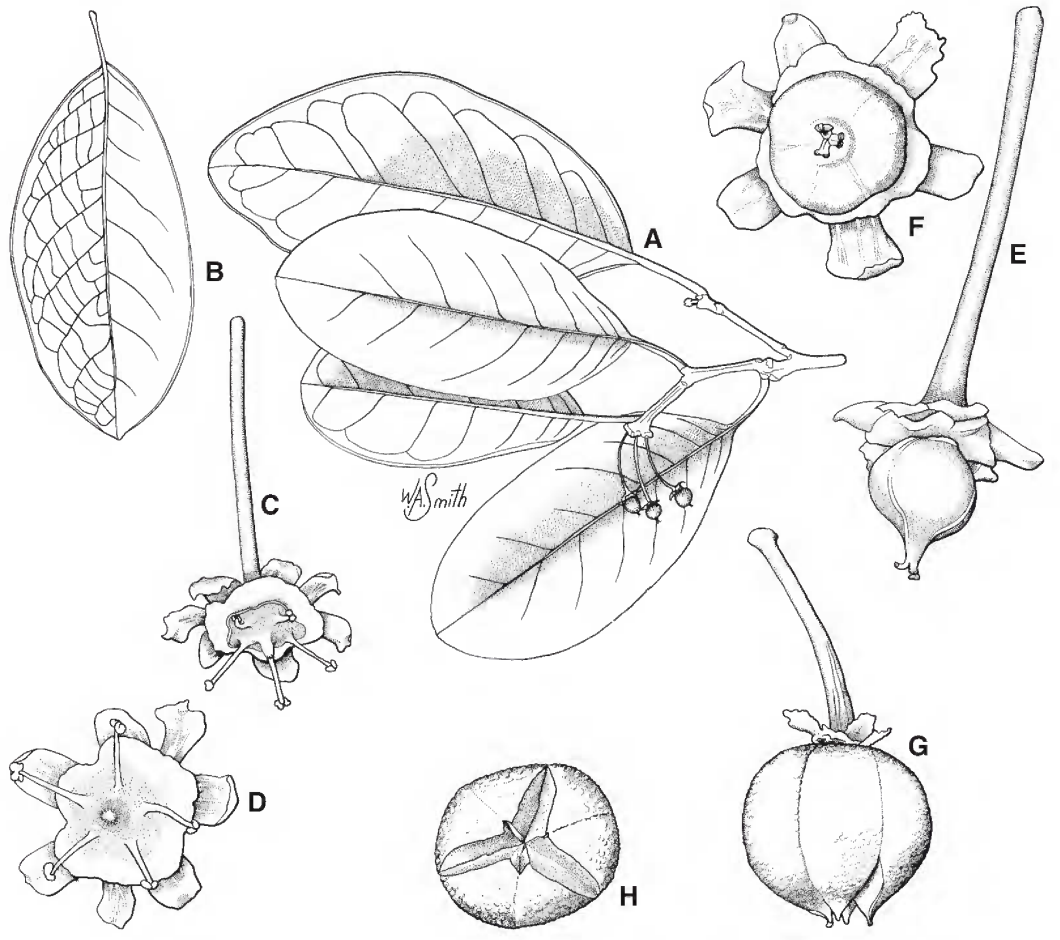

Fig. 2. ***Actephila championiae.*** A. habit of flowering branch ×0.5. B. abaxial leaf surface ×0.25. C. side view of male flower ×3. D. face view of male flower ×4. E. side view of female flower ×3. F. face view of female flower ×4. G. side view of dehiscing fruit ×1.5. H. face view of dehiscing fruit ×1.5. A, C, D-F from *Champion 870* (BRI); B, G, H from *Champion 900B* (BRI). Del. W. Smith.

12–110 mm wide, length/width ratio 1.8–2.8 (n=64); base acute to rounded, rarely weakly cordate and unequal; tip acute to rounded, rarely retuse; midrib above ± flat, dark green, below prominently raised at lamina base (height > width) then decreasing toward apex, pale yellow; venation brochidodromous, comprising 10–12 lateral veins per side of midrib and intercostal reticulate veins; upper surface dark green and glossy, lateral venation visible, intercostal venation ± obscure; lower surface pale green-yellow and matt, lateral and intercostal venation prominent, only laterals raised, 1° and 2° vein orders distinct, 3° and 4° vein orders indistinct, 5° and onwards vein orders obscure; margin entire, revolute, pale yellow. Inflorescence an axillary fascicle 3–4 mm diameter, rarely interpetiolar or on a short peduncle to 5 mm long, single sex or with both male and female flowers. Male flowers: pedicels filiform, 10–15 mm long, 0.8–1.3 mm diameter; sepals 5, oblong to obovate, fused for 2–2.5 mm at base, free lobes 2.5–4 mm long, 1.7–3 mm wide, ciliate in patch at apices; petals absent or one or two present, oblanceolate, oblong or spathulate, 3.2–4 mm long, 0.8–1.8 mm wide; disk conspicuous, fleshy, 1.5–2 mm high, 8–9 mm diameter, strongly 5–(6)-angled; stamens 5,

filaments 2.5–4 mm long, *c.* 0.2 mm diameter, anthers, 0.4–0.5 mm long, 0.6–0.8 mm wide. Female flowers: pedicels stout, 10–18 mm long, 0.8–2 mm diameter; sepals 5, obovate, fused at base for 1–1.5 mm, free lobes 2.8–3 mm long, 1.7–2 mm wide, ciliate in patch at apices; petals absent or one or two present, oblanceolate, oblong or spathulate, 3–3.2 mm long, 1–2 mm wide; disk conspicuous, fleshy, *c.* 1.5 mm high, 6–7 mm diameter, strongly 5-angled; ovary 3.5–4 mm long, 4–4.5 mm diameter; styles 3, simple, shortly connate at base, 1.7–2 mm long, stigmas subcapitate. Fruit: pedicels 12–25 mm long, 1–1.5 mm diameter; capsules depressed-globose to subglobose, rounded to weakly trilobate, 14–17 mm long, 14–20 mm diameter, weakly bullate, green; columella *c.* 9 mm long. Seeds not seen. **Fig. 2.**

***Additional specimens examined*: Queensland.** South Kennedy District: Black Mt., *c.* 7 km NW of Koumala, 21° 35'S, 149° 10'E, Dec 1993, *Champion 900a et al.* (AD, BRI, DNA); *loc. cit.*, Dec 1993, *Champion 900b et al.* (BRI); *loc. cit.*, Dec 1993, *Champion 900c et al.* (BRI, MEL, NSW); *loc. cit.*, Dec 1993, *Champion 900d et al.* (BRI); Cameron Creek, Black Mt., just N of join with rail line, *c.* 6 km NW of Koumala, 21° 55'S, 149° 25'E, Mar 1996, *Champion 1348 & Canning* (BRI, L); Cameron Creek, Black Mt., *c.* 6.3 km NW of Koumala township, 21° 55'S, 149° 25'E, Mar 1996, *Champion 1349 & Canning* (BRI, DNA, NSW); T.R. 179 Kalvin, Black Mt Range, 21° 36'S, 149° 11'E, Apr 1991, *Forster PIF8030 & McDonald* (BRI, L, MEL, QRS).

***Notes*:** *Actephila championiae* differs from *A. latifolia* Benth. in the cream branchlets (versus dark brown), the leaf lamina with a base that is obtuse to rounded, rarely weakly cordate (versus attenuate to cuneate), a margin that is revolute (versus flat), and abaxially with 1–2° of vein orders distinct (versus 1–3°); the female flowers with petals that are oblanceolate, oblong or spathulate (versus obovate) and larger (3–3.2 × 1–2 mm versus 1–2 × 0.5–1 mm) and a larger disk (6–7 mm diameter versus 3–4 mm).

Together with *A. latifolia* and *A. plicata*, *A. championiae* may comprise a natural species group with the species distributed in an allopatric geographic replacement sequence from central Queensland to the top of the 'Wet Tropics'.

***Distribution and habitat*:** *Actephila championiae* is narrowly endemic (single 1° grid cell) in central Queensland where it is restricted to the Black Mountain Range near Koumala (**Map 5**). Plants grow in the understorey of 'dry' rainforest (semi-deciduous, complex notophyll vineforest) on substrates derived from acid volcanic rocks at altitudes between 160 and 200 m.

***Conservation status*:** *Actephila championiae* is not present in any conservation reserves. Further survey work is required in the Black Mountain Range to determine an area of occupancy and estimation of the number of individuals for the species. *Actephila championiae* is currently listed as *Vulnerable* under the *NCA*.

***Etymology*:** *Actephila championiae* is named to honour Irene Champion of Mackay, in recognition of her significant contribution to the documentation and collection of the flora of central Queensland. Irene has contributed over 1300 herbarium collections to the Queensland Herbarium and made repeated visits to the habitat of this species to ensure the collection of fertile material after its initial discovery in a sterile state.

3. Actephila flavescens P.I.Forst. **sp. nov.** ab *A. lindleyi* (Steud.) Airy Shaw stipulis minoribus (0.5–0.8 × 0.5–0.8 mm) ovatis (adversum stipulas majores (1–1.7 × 0.8–1.5 mm) triangulari-ovatas), petiolis flavo-cremeis (non brunneis usque olivaceis), lamina folii margine revoluto (adversum planum usque recurvum), apice acuto (rarius acuminato) adversum apicem acutum vel rotundatum (rarius retusum), costa abaxiali manifeste emersa ad basim laminae (alto > latitudine) adversum valde emersam (alto < latitudine), flavescenti (adversum pallide flavo-viridi) et frutice majore (14–16 × 14–15 mm non 9–12 × 11–13.5 mm) et seminibus majoribus (9–11 × 7–8 mm non 6–7 × 5–6.5 mm) pallide olivaceis non atro-olivaceis differt.

Typus: Queensland. Cook District: Daintree National Park, Adeline Creek headwaters, Candlenut Scrub, 16° 07'S, 145° 03'E, 18 May 1999, *P.I. Forster PIF24571 & R. Booth* (holo: BRI; iso: QRS).

Shrub or small tree to 5 m high. Indumentum of simple trichomes, uncoloured, entire plant is glabrous unless stated otherwise. Branchlets glossy, cream, lenticellate with age. Stipules ovate, 0.5–0.8 mm long, 0.5–0.8 mm wide. Leaves alternate, subverticillate or subopposite, coriaceous, petiolate; petioles 4–12 mm long, 0.8–1.2 mm wide, cream-yellow, lenticellate with age; lamina length/petiole length ratio 6.5–23.8 (n=27); lamina oblanceolate to obovate, rarely ± falcate, ± flat, 57–120 mm long, 23–42 mm wide, length/width ratio 2–3.1 (n=27); base acute to attenuate; tip acuminate, rarely acute; midrib above strongly raised (height < width), dark green, below prominently raised at lamina base (height > width) then decreasing towards apex, pale yellow; venation brochidodromous, comprising 10 or 11 lateral veins per side of midrib and intercostal reticulate veins; upper surface dark green and glossy, lateral and intercostal venation visible; lower surface pale green, glossy, lateral venation slightly raised, intercostal venation visible and not raised, 1–3° vein orders distinct, 4° and 5° vein orders indistinct, 6° and onwards vein orders obscure or absent; margin entire, revolute, pale yellow. Inflorescence an axillary fascicle 1–3 mm diameter, rarely interpetiolar, single sex or with both male and female flowers. Male flowers not seen. Female flowers not seen at anthesis; sepals 5, oblong to ovate, 1.5–3 mm long, 0.8–1 mm wide, externally with a few scattered simple trichomes, apices cucullate, internally glabrous; petals not seen; disk conspicuous, fleshy, *c.* 1 mm high and 3 mm diameter, annular; ovary not seen; styles not seen, stigmas not seen. Fruit: pedicels 5–35 mm long, *c.* 1 mm diameter; capsules depressed-globose, rounded, 14–16 mm long, 14–15 mm diameter, strongly bullate, green; columella 7–8 mm long. Seeds 9–11 mm long, 7–8 mm wide, pale olive green; hilum *c.* 2 mm long, caruncle poorly developed, narrow-oblong, *c.* 2 mm long and 0.5 mm wide, cream.

***Additional specimens examined*: Queensland.** Cook District: Cedar Bay, 15° 47'S, 145° 21'E, Jan 1973, *Dick sub Webb & Tracey 13774* (QRS); Mt Hedley, 3 km ENE of Rossville, T.R. 165, 15° 44'S, 145° 17'E, Apr 1999, *Forster PIF24293 & Booth* (BRI, QRS); Shipton's Flat on Tin Mine road, 15° 45'S, 145° 10'E, May 1969, *Smith 14358* (BRI).

***Notes*:** This is a poorly collected species and its morphological description is incomplete. I have seen only sterile or fruiting material and collectors should seek flowers when encountering this plant. *Actephila flavescens* appears to be closely allied to *A. lindleyi* but is disjunct by 2° of latitude from populations of that species and differs in the smaller (0.5–0.8 × 0.5–0.8 mm) ovate stipules (versus larger (1–1.7 × 0.8–1.5 mm) triangular-ovate stipules); the cream-yellow petioles (versus brown to olive-green stipules); the leaf lamina with a revolute margin (versus flat to recurved), tip that is acuminate (rarely acute) versus acute or rounded (rarely retuse), the midrib abaxially prominently raised at lamina base (height > width) (versus strongly raised (height < or ± equal to width) and pale yellow (versus pale green-yellow); and the larger fruit (14–16 × 14–15 mm versus 9–12 × 11–13.5 mm) and larger seeds (9–11 × 7–8 mm versus 6–7 × 5–6.5 mm) that are pale olive-green (versus dark olive green).

Actephila flavescens appears to form a natural species group with *A. grandifolia, A. lindleyi, A. traceyi, A. venusta* and *A. vernicosa*, with all of these species being geographically allopatric.

***Distribution and habitat*:** *Actephila flavescens* is known from a restricted area (single 1° grid cell) in the 'Wet Tropics' of north-eastern Queensland between Mt Hedley and Adeline Creek (**Map 2**). Plants have been collected from 'dry' rainforest (semideciduous, complex notophyll vineforest) on substrates derived from granite at altitudes between 480 and 540 m

***Conservation status*:** *Actephila flavescens* is present in the Daintree National Park and Timber Reserve 165. At Mt Hedley and Adeline Creek plants were locally common, but no attempt was made at the time to determine population sizes. Further survey is required of suitable habitats within the known distribution area to determine an area of occupancy and estimation of the number of individuals for the species. It is likely that *A. flavescens* is not currently threatened.

***Etymology*:** The specific epithet is derived from the Latin adjective *flavescens* (yellowish, pale yellow) and refers to the prominent leaf lamina midrib of this species (when compared to *A. lindleyi*) as viewed from below.

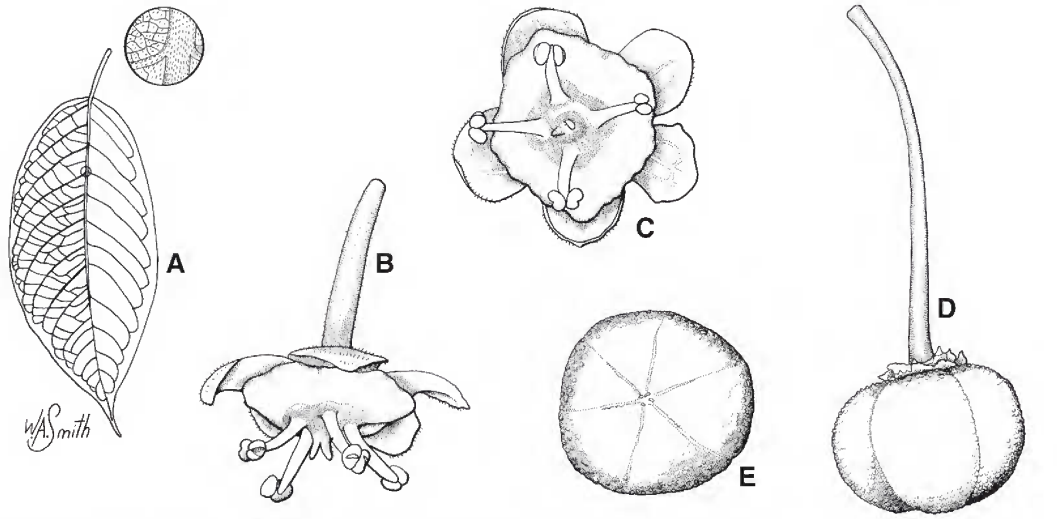

Fig. 3. *Actephila foetida.* A. abaxial leaf surface with detail of indumentum ×0.25. B. side view of male flower ×6. C. face view of male flower ×7. D. side view of fruit ×1.5. E. face view of fruit ×1.5. A-C from *Forster PIF28216* (BRI); D, E from *Jago 6004* (BRI). Del. W. Smith.

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4. Actephila foetida Domin, *Biblioth. Bot.* 89: 315 (1927). **Type:** Queensland. Cook District: in hygrodrymio apud rivulum Harveys Creek, distr. Cairns, December 1909, *K. Domin 5839* (lecto [here designated]: PR528400).

***Illustrations*:** Hyland *et al.* (1999, 2003).

Subshrub to 1 m tall. Indumentum of simple trichomes, pale fawn. Branchlets glossy, fawn, densely pubescent when young, glabrescent and lenticellate with age. Stipules triangular, 1–2.2 mm long, 1.5–2 mm wide, with scattered to dense indumentum. Leaves alternate, chartaceous, petiolate; petioles 18–78 mm long, 1–5 mm wide, dark olive-green, with dense indumentum when young, glabrescent and lenticellate; lamina length/petiole length ratio 2.8–12.8 (n=21); lamina broadly elliptic to obovate, ± flat, 45–530 mm long, 30–213 mm wide, length/width ratio 1.9–2.7 (n=21); base cordate to truncate; tip obtuse to long acuminate; midrib above ± flat, dark olive-green, below prominently raised at lamina base (height > width) then decreasing towards apex, dark olive-green; venation brochidodromous, comprising 12–15 lateral veins per side of midrib and intercostal reticulate veins; upper surface dark olive-green, lateral venation visible, intercostal venation ± obscure, glabrous or with an occasional trichome on the midrib; lower surface pale olive-green, lateral venation prominent and raised, intercostal venation prominent but not raised, 1–4° vein orders distinct, 5° vein order indistinct, 6° and onwards vein orders obscure, with sparse, hispid indumentum, apart from on the lateral veins where it may be dense; margin entire, flat, pale olive-green. Inflorescence an axillary fascicle 7–13 mm diameter, with both male and female flowers. Male flowers: pedicels filiform, 3.5–8 mm long, 0.5–0.7 mm diameter, with sparse, hispid indumentum; sepals 5, lanceolate-ovate to obtuse-ovate, 2–2.5 mm long, 1–1.8 mm wide, ciliate, with sparse indumentum externally, glabrous internally; petals absent; disk conspicuous, fleshy, *c.* 1 mm high, 3.5–4 mm diameter, irregularly 4 or 5-angled; stamens 4 or 5, filaments 1.3–1.8 mm long, *c.* 0.2 mm diameter, glabrous, anthers globose-ovoid, *c.* 0.4 mm long, 0.3–0.4 mm wide. Female flowers: pedicels filiform, 7.5–9 mm long, 0.5–0.7 mm diameter, with sparse, hispid indumentum; sepals 5, obovate, 3–4 mm long, 2–2.8 mm wide, ciliate, with sparse indumentum externally, glabrous internally; petals absent; disk conspicuous, fleshy, *c.* 1 mm high, 4–4.5 mm diameter, irregularly 4 or 5 angled; ovary 1.4–1.8 mm long, 1.8–2 mm diameter, with dense indumentum; styles 3, simple, *c.* 1 mm long, stigmas subcapitate. Fruit: pedicels 7–35 mm long, 1–2 mm diameter,

glabrous; capsules depressed-globose, rounded to weakly trilobate, 12–13 mm long, 15–19 mm diameter, strongly bullate; columella 3.5–7 mm long. Seeds 8–10 mm long, 7–12 mm wide, hilum 1.5–2 mm long, caruncle poorly developed, narrow-oblong, 2.3–3 long, 0.3–0.8 mm wide, cream. **Fig. 3.**

***Additional specimens examined*: Queensland.** Cook District: 8 km from Bellenden Ker, 17° 16'S, 145° 55'E, Dec 1992, *Bruhl 1022 et al.* (BRI, QRS); Harveys Creek, Jan 1910, *Domin 3410* (PR); *loc. cit.*, Dec 1909, *Domin 5838* (PR – residual syntype); Bellenden Ker cable car Base Station, 17° 16'S, 145° 54'E, Jan 2002, *Forster PIF28216 et al.* (BRI); adjacent to Bellenden Ker Primary School, 17° 16'S, 145° 55'E, Nov 1994, *Gray 5844, 5845* (QRS); *loc. cit.*, Dec 1994, *Gray* 5881 (QRS); N.P.R. 226 (Harvey Creek), 17° 15'S, 145° 50'E, Jan 1972, *Hyland 5788* (BRI, QRS); adjacent to Bellenden Ker State School on Harvey Creek road, 17° 17'S, 145° 55'E, Mar 1981, *Irvine 2092, 2094* (QRS); Harveys Creek, Bellenden Ker, Dec 1991, *Jago C3694* (BRI); Parish of Bellenden Ker, Local Gov. Res. 806 & part of adjoining road reserve, 17° 16'S, 145° 55'E, Jun 1985, *Lyons 2* (BRI); *loc. cit.*, Dec 1985, *Lyons 5* (QRS); Hutchinson's Creek, Cow Bay, 16° 13'S, 145° 24'E, Oct 1996, *Small 5* (QRS); Harvey Creek, Russell River, 1887, *Sayer s.n.* (MEL); Bellenden Ker, 17° 17'S, 145° 54'E, Mar 1981, *Stocker 1782* (QRS).

***Distribution and habitat*:** *Actephila foetida* has a restricted distribution in the Wet Tropics of north-eastern Queensland with two centres of distribution in adjacent 1° grid cells: the vicinity of the township of Bellenden Ker near and along Harvey Creek and north of the Daintree River at Hutchinson Creek (**Map 4**). Plants occur as understorey shrubs in 'wet' lowland rainforest (evergreen, complex mesophyll vineforest) on alluvium overlying granite substrates at altitudes from near sea level to 100 m.

***Typification*:** The protologue for *Actephila foetida* states "Nordost-Queensland: Regenwälder bei Harveys Creek (DOMIN XII.1909)". There are three collections of this species by Domin at PR, one (PR528398: fruiting) was collected in January 1910, the other two (PR528399 & PR528400: both flowering) in December 1909. The better of these two (PR528440) has three complete leaves and both male flowers and fruiting peduncles and is selected here as lectotype of the name.

***Notes*:** *Actephila foetida* is poorly known in terms of the potential variation in its morphology due to a paucity of fertile collections. It is a highly distinctive species due to the large leaves (generally between 20 and 35 cm long) that are covered in hispid indumentum on the lower lamina surface and the flowers that lack petals and that have hispid indumentum on the pedicels and the calyx. Airy Shaw (1981) described the fruit of this species as 5-6 mm long, but these measurements must have been taken from immature material.

The population at Hutchinson's Creek lacks comprehensive fertile collections, but appear to have sparser indumentum on the foliage than those from Harvey Creek.

***Conservation status*:** *Actephila foetida* is currently listed as *Vulnerable* under the *NCA*. Populations are present in Daintree and Wooroonooran National Parks. There is no accurate information about the area of occupancy for the species or the number of individuals that exist. The species is locally common at the base of Bellenden Ker and along Harvey Creek.

***Etymology*:** The specific epithet is formed from the Latin word *foetidus* (stinking, evil smelling) and refers to the smell of the male flowers.

5. Actephila grandifolia (Müll.Arg.) Baill., *Adansonia* 6: 330 (1866).

Lithoxylon grandifolium Müll.Arg., *Linnaea* 34: 65 (1865). **Type:** New South Wales. ("Nouvelle Hollandia"), Clarence River, *F. Mueller s.n.* (holo: G-DC [photo at BRI!]

***Illustration*:** Baillon (1866b: t. 10).

Subshrub or shrub to 3 m high. Indumentum of simple or pustular-glandular trichomes, uncoloured to pale ferruginous, entire plant is glabrous unless stated otherwise. Branchlets glossy, tan, lenticellate with age, glabrous or with scattered to sparse pustular-glandular trichomes, glabrescent. Stipules triangular to triangular-ovate, 0.8–2 mm long, 0.7–1.5 mm wide. Leaves alternate, subverticillate or subopposite, coriaceous, petiolate; petioles 3–30 mm long, 0.8–2 mm wide, cream, lenticellate with age; lamina length/petiole length ratio 4.3–18 (n=184); lamina oblanceolate to obovate, rarely narrow-elliptic, often weakly falcate, ± flat, 31–240 mm long, 10–64 mm wide, length/width ratio 2.3–5.8 (n=184); base acute,

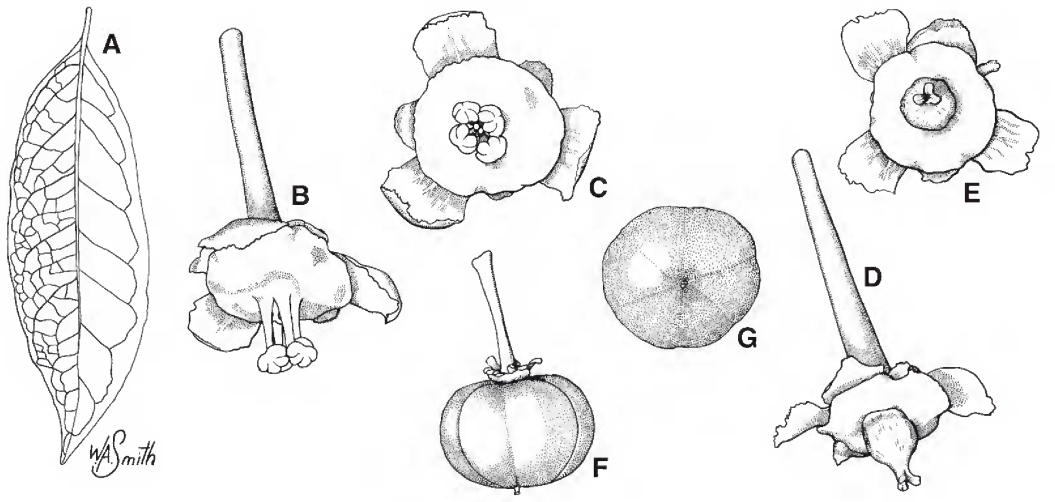

Fig. 4. ***Actephila grandifolia***. A. abaxial leaf surface ×0.5. B. side view of male flower ×4. C. face view of male flower ×4. D. side view of female flower ×4. E. face view of male flower ×4. F. side view of fruit ×1.5. G. face view of fruit ×1.5. A, F, G from *Forster PIF25276* (BRI); B-E from *Forster PIF25283* (BRI). Del. W. Smith.

acuminate, attenuate or cuneate, often unequal; tip acute or acuminate, rarely retuse, rounded or truncate; midrib above slightly raised (height < 5 times the width), pale yellow, below strongly raised at lamina base (height < or ± equal to width) then decreasing towards apex, pale green-yellow; venation brochidodromous, comprising 7–14 lateral veins per side of midrib and intercostal reticulate veins; upper surface dark green and glossy, lateral and intercostal venation visible; lower surface pale green, matt-glaucous, often drying brown, lateral venation slightly raised, intercostal venation visible and slightly raised, 1–3° vein orders distinct, 4° and 5° vein orders indistinct, 6° and onwards vein orders obscure; margin entire to slightly wavy or undulate, recurved, pale green-yellow. Inflorescence an axillary fascicle 2–4 mm diameter, single sex or with both male and female flowers. Male flowers: pedicels filiform, 10–20 mm long, 0.1–0.4 mm diameter; sepals 5, obovate, 2–3.5 mm long, 1.8–3 mm wide, apices with a dense patch of hairs internally, ciliate and with scattered hairs towards base externally; petals absent, or one to three present, oblong to spathulate, 1.4–1.5 mm long, 0.5–0.7 mm wide, irregularly bidentate; disk conspicuous, fleshy, 0.8–1 mm high, 3–5 mm diameter, annular, white; stamens 3 or 4, filaments 2.2–4.5 mm long, 0.1–0.2 mm diameter, anthers globose-ovoid, 0.5–0.6 mm long, 0.7–0.8 mm wide. Female flowers: pedicels filiform, 7–28 mm long, 0.4–0.5 mm diameter, glabrous or with scattered, uncoloured simple trichomes; sepals 5, obovate, 2.2–3 mm long, 1–2 mm wide, apices internally densely ciliate, with scattered to sparse trichomes towards base externally; petals absent or one or two present, oblong to spathulate, 1–1.5 mm long, 0.5–0.8 mm wide; disk conspicuous, fleshy, 0.8–1 mm high, 2.5–5 mm diameter, annular; ovary 1–3 mm long, 1.2–3 mm diameter; styles 3, simple, shortly connate at base, 0.8–1 mm long, stigmas subcapitate. Fruit: pedicels 7–28 mm long, 0.5–1 mm diameter; capsules depressed-globose, rounded, 9–11 mm long, 12–15 mm diameter, strongly bullate, green; columella 5–8 mm long. Seeds 6–9.5 mm long, 5–8.5 mm wide, dark olive green with irregular darker green blotches; hilum 2.5–3.5 mm long, caruncle poorly developed, narrow-oblong, 1–2.5 mm long, 0.2–0.3 mm wide, cream. **Fig. 4.**

***Selected specimens examined*: Queensland.** Moreton District: Lyrebird road, Springbrook, 28° 11'S, 153° 15'E, *s.dat.*, *Davidson s.n.* (BRI [AQ440657]); Camp Eden, Currumbin Valley, 28° 14'S, 153° 21'E, Dec 1997, *Forster PIF22023 & Leiper* (BRI, DNA, NE, QRS); Springbrook, Lyre Bird Ridge road, 28° 11'S, 153° 15'E, Jan 2000, *Forster PIF25276 & Leiper* (BRI, K, L, MEL, QRS); Springbrook, Repeater Station road to

Best of All Lookout, 28° 13'S, 153° 15'E, Jan 2000, *Forster PIF25283* (A, AD, BRI, K, L, MEL, NSW, QRS); Upper Currumbin Creek, 2 km ESE of Boyd's Butte, Aug 1976, *McDonald 1497 & Whiteman* (BRI, CANB). **New South Wales.** Bexhill, 28° 46'S, 153° 21'E, Feb 1891, *Baker 120* (NSW); Mullumbimby, 28° 33'S, 153° 30'E, Jun 1894, *Baker s.n.* (NSW239914, 239915); 6 km NW of Bangalow, 28° 31'S, 153° 28'E, Jan 1984, *Beesley 89* (CANB); 3 km W of Burringbar, 28° 27'S, 153° 26'E, Jan 1984, *Beesley 101* (CANB); Richmond River, Aug 1884, *Betche s.n.* (NSW239763); Rocky Creek, Whian Whian S.F., 17.6 km NNE of Lismore, 28° 39'S, 153° 20'E, Sep 1972, *Coveny 4446 & Rodd* (BRI, NSW); Big Scrub Reserve on Rocky Creek, Whian Whian S.F., 4.8 km NNE of Dunoon, 28° 38'S, 153° 20'E, Jan 1980, *Coveny 10597 & Hind* (BRI, NSW); Upper Crystal Creek, 28° 16'S, 153° 18'E, May 1977, *Floyd AGF347* (CANB); Hill 1 km E of Mooball, 28° 27'S, 153° 30'E, Jul 1981, *Guymer 81038 & Harden* (NSW); Richmond River, Sep 1867, *Henderson 58* (MEL); Red Scrub, Whian Whian, 28° 34'S, 153° 21'E, Feb 1967, *Jones 3469* (CANB); Tintenbar, 28° 48'S, 153° 31'E, Oct 1894, *Maiden s.n.* (NSW239894); Eureka, Richmond River, 28° 40'S, 153° 26'E, Jul 1915, *Rupp s.n.* (MEL47993); Whian Whian S.F., Big Scrub F.R., 28° 38'S, 153° 20'E, Jun 1986, *Shapcott s.n.* (BRI [AQ451831]); Marshall Falls, Alstonville, 28° 50'S, 153° 26'E, Sep 1911, *Tanner s.n.*(NSW239853); Red Scrub, Whian Whian S.F., 28° 38'S, 153° 17'E, Aug 1974, *Webb & Tracey 11456* (BRI).

***Distribution and habitat*:** *Actephila grandifolia* has a restricted distribution in south-eastern Queensland and north-eastern New South Wales where it is known from a single 1° grid cell with a northern limit at Springbrook and a southern limit at Alstonville (**Map 5**). Plants grow in the understorey of subtropical 'wet' rainforest (complex notophyll vineforest) or in open forest dominated by eucalypts and with a scrubby rainforest understorey. Substrates are soils derived from basalt at altitudes between 40 and 950 m.

***Notes*:** *Actephila grandifolia* occurs in the wetter rainforests (evergreen, complex notophyll vineforest) of the Springbrook Plateau and extreme north-east of New South Wales. It is ecologically allopatric with *A. lindleyi,* although the distance between populations of the two species may not be great. The differences between *Actephila grandifolia* and *A. lindleyi* (as *A. mooreana*) were eloquently outlined by Baillon (1866b) together with a particularly detailed plate of the former. *Actephila grandifolia* was lumped into the synonymy of *A. lindleyi* by Airy Shaw (1971) and as a result disappeared from botanical view for the last 30 years (e.g. Stanley 1983; James & Harden 1990; Forster *et al.* 1991; Forster & Henderson 1997; Hauser & Blok 1998; Forster & Halford 2002), despite being recognised in herbaria (BRI, NSW) prior to this. Airy Shaw must have had second doubts about this placement, as in 1974 he determined specimens in MEL as *A. cf. grandifolia.*

Actephila grandifolia is easily distinguished from *A. lindleyi* by the leaves with cream petioles (versus brown to olive-green), the foliage being noticeably matt-glaucous below (versus glossy) and the male flowers with much longer, filiform pedicels (10–20 × 0.1–0.4 mm versus 1.5–5 × 0.2–0.8 mm), obovate sepals (versus oblong to ovate) and smaller petals (1.4–1.5 versus 2–2.5 mm long).

A chromosome count of 2n = 40 was recorded for material of *A. grandifolia* collected near "Lismore" (probably the Whian Whian S.F. collection cited above) (Shapcott 1998). On the basis of several morphological and chromosome characters Shapcott (1998) clearly distinguished her "Lismore" population from three populations of *A. lindleyi sensu stricta.* However, this was not the case with electrophoretic data where the "Lismore" population was indistinguishable from the *A. lindleyi* populations at "Mt Glorious" and "Biggenden".

***Conservation status*:** *Actephila grandifolia* is present in Springbrook National Park in Queensland and Whian Whian State Forest in New South Wales. Plants are usually locally common within a population. No information is available on the area of occupancy for each population, or the numbers of plants within individual populations.

This species (as "*A. lindleyi*") is used as a nest site in the Richmond Range of north-eastern New South Wales by the yellow-throated scrubwren *Sericornis citreogularis,* the nests of that species then being used by the golden-tipped bat *Kerivoula papuensis* as a roost site (Schulz 2000). This bird and bat use a range of other species, so it is likely that the use of the *Actephila* is related to abundance and habit within the site and conservation of the animals is not dependent on this particular plant species.

***Etymology*:** The specific epithet is formed from the Latin words *grandis* (large) and *–folius* (leaved) and alludes to the size of the leaves in this species when compared to *A. lindleyi*.

6. Actephila latifolia Benth., *Fl. Austral.* 6: 89 (1873). **Type:** Queensland. Cape York, *Daemel s.n.* (lecto: K [photo at BRI!], *fide* Airy Shaw (1981: 587)).

Actephila sp. (Little Mossman BH13697) (Hyland *et al.* 1999, 2003).

***Illustrations*:** Hyland *et al.* (1999, 2003).

Subshrub or shrub to 3 m high. Indumentum of simple trichomes, uncoloured, entire plant is glabrous unless stated otherwise. Branchlets glossy, dark brown, lenticellate with age. Stipules triangular, 1.5–2 mm long, 0.8–1.2 mm wide. Leaves alternate to subverticillate, coriaceous, petiolate; petioles 3–20 mm long, 1–2 mm wide, olive green, occasionally lenticellate; lamina length/petiole length ratio 10.8–22.5 (n=104); lamina elliptic, narrow-elliptic or oblanceolate, rarely obovate or orbicular, ± flat, 40–220 mm long, 16–80 mm wide, length/width ratio 1.9–4.2 (n=104); base attenuate to cuneate; tip acute, obtuse or rounded; midrib above slightly raised (height < 5 times the width), dark green, below prominently raised at lamina base (height > width) then decreasing towards apex, green-yellow; venation brochidodromous, comprising 10–14 lateral veins per side of midrib and intercostal reticulate veins; upper surface dark green and matt, lateral venation barely visible, intercostal venation obscure; lower surface olive green and matt, lateral venation prominent and slightly raised, intercostal venation visible but not raised, 1–3° vein orders distinct, 4° vein order indistinct, 5° and onwards vein orders obscure; margin entire, flat, green-yellow. Inflorescence an axillary fascicle 3–5 mm diameter, single sex or with both male and female flowers. Male flowers: pedicels filiform, 2.5–7.5 mm long, 0.8–1 mm diameter; sepals 5, obovate to ovate, 2–3 mm long, 1.2–1.8 mm wide, apices cucullate and densely ciliate; petals absent, or rarely present as a single one, obovate, *c.* 1.5 mm long and 0.8 mm wide, irregularly bidentate; disk conspicuous, fleshy, 0.8–1 mm high, 2.5–4 mm diameter, 5-angled; stamens 3–5, filaments 1.2–2.5 mm long, *c.* 0.1 mm diameter, anthers globose-ovoid, 0.3–0.5 mm long, 0.5–0.7 mm wide. Female flowers: pedicels filiform, 5–7 mm long, 0.8–1 mm diameter; sepals 5, obovate to ovate, 2–2.5 mm long, 1.5–1.8 mm wide, apices pouched and densely ciliate; petals absent or rarely present as a single one, obovate, 1–2 mm long, 0.5–1 mm wide; disk conspicuous, fleshy, 0.8–1 mm high, 3–4 mm diameter, 5 or 6-angled; ovary 2–2.5 mm long, 2–3 mm diameter; styles 3, simple, shortly connate at base, 0.8–1 mm long, stigmas subcapitate. Fruit: pedicels 2–32 mm long, 0.8–1 mm diameter; capsules depressed-globose, rounded, 12–14 mm long, 14–17 mm diameter, strongly bullate, green; columella 6–7 mm long. Seeds 8–9 mm long, 5.5–6.5 mm wide, olive green with irregular dark green blotches; hilum 1.4–3 mm long, caruncle poorly developed, narrow-oblong, 2–3 mm long, 0.8–1 mm wide, cream. **Fig. 5.**

***Additional specimens examined*: Queensland.** Cook District: N.P.R. 142, summit of Mt Cook, 15° 29'S, 145° 16'E, Feb 1992, *Fell DGF2416 et al.* (QRS); Mt Perserverence road, near Nissen Creek via Julatten, 16° 33'S, 145° 20'E, Feb 2003, *Ford 3838 & Holmes* (BRI, QRS); Bridle L.A., S.F. 607 Dinden, 16° 58'S, 145° 35'E, Jul 1994, *Forster PIF15486 et al.* (BRI, QRS); Bridle L.A., S.F. 607 Dinden, 16° 58'S, 145° 36'E, Jul 1994, *Forster PIF15491 et al.* (BRI, QRS); Lake Morris, Copperlode Dam, 16° 59'S, 145° 39'E, Dec 1999, *Forster PIF25217 & Booth* (BRI, MEL, QRS); S.F. 607 Dinden, Bridle Creek track, 16° 59'S, 145° 36'E, Jan 2002, *Forster PIF28120 et al.* (A, AD, BISH, BRI, MEL, MO, NE, NSW, NY, Z); Currunda Creek, Redlynch, 7 km W of Cairns, 16° 55'S, 145° 40'E, Dec 2003, *Forster PIF29786 & Jensen* (A, BRI, L, MEL, NSW, Z); S.F.R. 141, Little Mossman L.A., 16° 33'S, 145° 22'E, Jun 1995, *Gray 6238, 6239* (QRS); Special Purposes Reserve, near Lake Placid, 16° 52'S, 145° 40'E, Nov 1991, *Jago 737* (QRS); Moores Gully, 16° 48, 145° 40'E, Nov 1987, *Sankowsky 756 & Sankowsky* (BRI); cult. Tolga (ex Rex Range), Dec 2004, *Sankowsky 2553 & Sankowsky* (BRI); Mt Stuckey area, NW of Starke Station, 14° 56'S, 145° 03'E, Sep 1974, *Tracey 14295* (BRI); Macalister Range, 16° 50'S, 145° 40'E, Dec 1999, *Wannan 865 & Jago* (NSW); Smithfield – Black Mt road, via Kuranda, 1962, *Webb & Tracey 7269A* (BRI); Mt Stuckey, W of Starcke Station, 14° 56'S, 145° 03'E, Sep 1974, *Webb & Tracey 13789* (BRI).

***Distribution and habitat*:** *Actephila latifolia* is endemic to north-eastern Queensland over three 1° grid cells in the 'Wet Tropics' bioregion with a northern limit at Mt Stuckey and a southern limit at Bridle Creek and Lake Morris (**Map 5**). Although the type collection is labelled as 'Cape York' it is unlikely that it was made

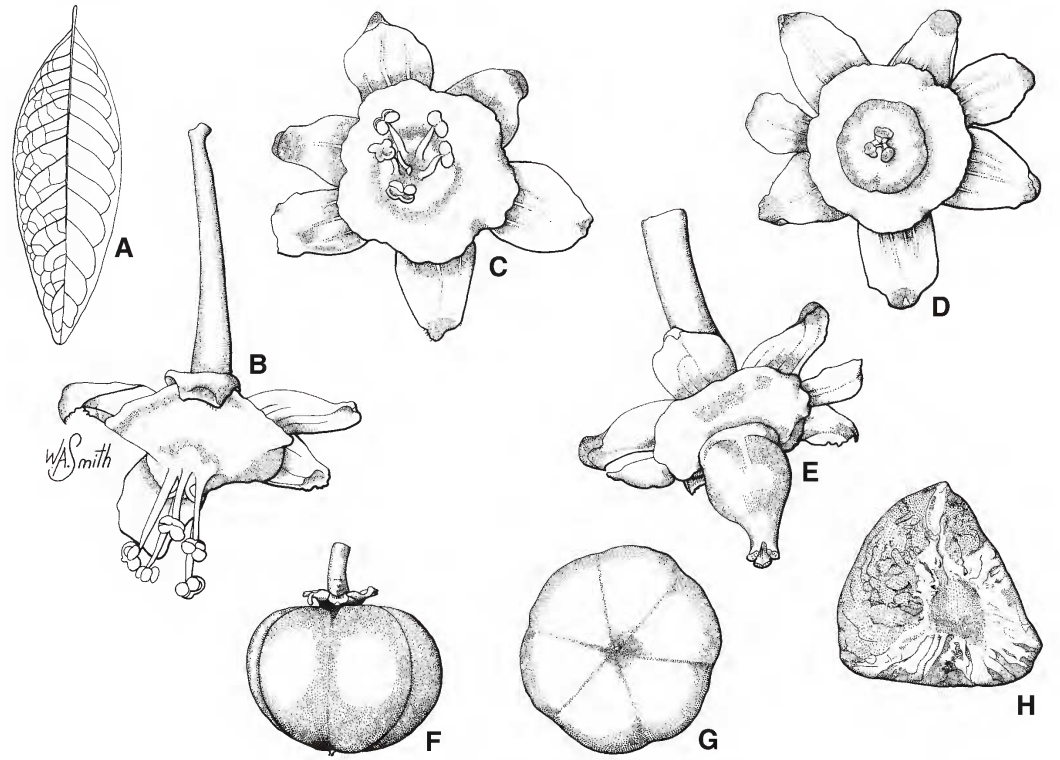

Fig. 5. ***Actephila latifolia.*** A. abaxial leaf surface ×0.25. B. side view of male flower ×6. C. face view of male flower ×6. D. side view of female flower ×6. E. face view of female flower ×6. F. side view of fruit ×1.5. G. face view of fruit ×1.5. H. ventral view of seed ×3. A, F-H from *Forster PIF15491* (BRI); B-E from *Forster PIF29786* (BRI). Del. W. Smith.

from the Cape of that name, but rather from somewhere in the vicinity of Cooktown at the southern end of Cape York Peninsula. Plants grow at altitudes between 200 and 500 m, in 'seasonally dry' rainforest (complex mesophyll or complex notophyll vineforests) on alluvial or rocky substrates derived from basalt, granite, metamorphics or mudstone.

***Notes*:** *Actephila latifolia* is a distinctive plant that appears closely allied to the more southerly distributed *A. championiae* and *A. plicata.* These species share the characteristics of leaves that are pale green-yellow to olive green below, but differ in a number of characters, such as leaf shape, lamina venation and fruit shape.

As noted previously (Forster 2004), *Actephila latifolia* has been misidentified for some time as an undescribed species (Hyland *et al.* 1999, 2003).

***Conservation status*:** *Actephila latifolia* is present in Mt Cook and Starcke National Parks, Jumrum Creek Conservation Park and State Forests 141, 607, 1229. It is not considered rare or threatened and none of the known populations are under direct anthropogenic threat. There is no information available on the area of occupancy or the number of individuals within populations.

***Etymology*:** The specific epithet is derived from the Latin words *latus* (broad, wide) and *-folius* (leaved) and alludes to the size and shape of the leaves.

7. Actephila lindleyi (Steud.) Airy Shaw, *Kew Bull.* 25: 496 (1971).

[*Securinega nitida auct.* Lindl., *non* Willd.; *Collect. Bot.* t. 9 (1821)]

Lithoxylon lindleyi Steud., *Nomenclat. Bot.*, ed. 2, 2: 57 (1841), *nom. nov.* **Type:** Cult. in Hort. Kew, "Nat. of Otaheite" [exact origin unknown], 1813–1821 (holo: K [photo at BRI!]).

Lithoxylon nitidum Baill., *Ét. Gén. Euphorb.* 590 (1858), *nom. illegit., superfl.*

Actephila nitida (Baill.) Benth. & Hook.f. ex Drake del Castillo, *Illustr. insul. Maris Pacific* 177 & 286 (1892), *nom. illegit., superfl.*

Actephila mooreana Baill., *Adansonia* 6: 330, 366 (1866). **Type:** New South Wales. Mount Lindsay, Richmond River, 1851, *C. Moore 211* (holo: P [photo at BRI!]

***Illustrations*:** Floyd (1989: 134); James & Harden (1990: 393); Hauser & Blok (1998: 145).

Shrub or small tree to 6 m high. Indumentum of simple trichomes, uncoloured to pale ferruginous, entire plant is glabrous unless stated otherwise. Branchlets glossy, cream to tan-yellow, lenticellate with age. Stipules triangular-ovate, 1–1.7 mm long, 0.8–1.5 mm wide. Leaves alternate, subverticillate or subopposite, coriaceous, petiolate; petioles 2–24 mm long, 1–2 mm wide, brown to olive-green, lenticellate with age; lamina length/petiole length ratio 5.1–22.7 (n=218); lamina elliptic-oblong, oblanceolate or obovate, rarely ± falcate, ± flat, 30–172 mm long, 12–64 mm wide, length/width ratio 1.6–3.7 (n=218); base acute to attenuate; tip acute to rounded, rarely retuse; midrib above slightly raised (height < 5 times the width), dark green, below strongly raised at lamina base (height < width) then decreasing towards apex, pale green-yellow; venation brochidodromous, comprising 7–12 lateral veins per side of midrib and intercostal reticulate veins; upper surface dark green and glossy, lateral and intercostal venation visible; lower surface pale green-yellow, glossy, often drying pale brown, lateral venation slightly raised, intercostal venation visible and slightly raised, 1–3 (rarely 4)° vein orders distinct, 4° and 5 (rarely 6)° vein orders indistinct, 6 (rarely 7)° and onwards vein orders obscure; margin entire to slightly wavy or undulate, flat to recurved (rarely revolute), pale yellow. Inflorescence an axillary fascicle 1–4 mm diameter, rarely interpetiolar, single sex or with both male and female flowers. Male flowers: pedicels filiform, 1.5–5 mm long, 0.2–0.8 mm diameter; sepals 5 (rarely 6), oblong to ovate, 1-3 mm long, 1.2–1.5 mm wide, apices cucullate, ciliate internally; petals absent, or 1–5, linear-oblong to oblong-spathulate, 2–2.5 mm long, 0.8–1.3 mm wide, rarely ciliate; disk conspicuous, fleshy, 0.4-1 mm high, 1.2–3.5 mm diameter, rounded, yellow; stamens 4 or 5, filaments 1–3 mm long, 0.1–0.2 mm diameter, anthers globose-ovoid, 0.3–0.6 mm long, 0.4–0.8 mm wide. Female flowers: pedicels filiform, 2–14 mm long, 0.4–1 mm diameter, glabrous or with scattered to sparse, uncoloured to pale ferruginous simple trichomes; sepals 5, oblong to ovate, 1–3 mm long, 0.5–1.5 mm wide, apices cucullate, internally densely ciliate; petals absent or 1–3, linear-oblong to oblong-spathulate, 0.8–2.5 mm long, 0.3–1.5 mm wide; disk conspicuous, fleshy, 0.5–1 mm high, 2–4 mm diameter, annular to 5-angled, glabrous, rarely with scattered trichomes; ovary 0.8–2.5 mm long, 1.2–2.5 mm diameter; styles 3, simple, shortly connate at base, 0.5–1 mm long, stigmas subcapitate. Fruit: pedicels 3–25 mm long, 0.6–1.2 mm diameter; capsules depressed-globose, ovoid or rounded, 9–12 mm long, 11–13.5 mm diameter, strongly bullate, olive-green; columella 5–7 mm long. Seeds 6–7 mm long, 5–6.5 mm wide, dark olive green; hilum 2–3 mm long, caruncle poorly developed, ± obscure or narrow-oblong, 1–1.5 mm long, *c.* 0.2 mm wide, cream. **Fig. 6.**

***Selected specimens examined*: Queensland.** North Kennedy District: Hervey Range, off Hervey Range road, W of Townsville, Sep 1995, *Cumming 13728* (BRI). South Kennedy District: Eastern side of Spencer Gap, Peak Downs Highway, SW of Eton, 21° 20'S, 148° 56'E, Nov 1989, *McDonald 4428 et al.* (BRI, NSW, QRS). Port Curtis District: Lower reaches of Koolkoorum Creek, 24° 25'S, 151° 12'E, Dec 1993, *Forster PIF14262* (A, BRI, L, MEL, QRS). Burnett District: S.F. 95, 20 km WSW of Gayndah, 25° 42'S, 151° 25'E, Mar 1999, *Forster PIF24166 & Booth* (AD, BRI, K, L, MEL, NSW, QRS); Kirbys road, Bundaberg, 24° 49'S, 152° 23'E, Sep 1999, *Forster PIF24918 & Schmitt* (BRI); Goodnight Scrub National Park, 25° 14'S, 151° 54'E, Jan 2004, *Forster PIF29902 & Tucker* (BRI, MEL, NSW). Wide Bay District: Council Beauty Spot, 1 km E of Mt Cooroy, 26° 26'S, 152° 58'E, Nov 1990, *Forster PIF7587 & Sharpe* (BRI, L, QRS); Utopia, 14 km SSE of Biggenden, 25° 38'S, 152° 06'E, Dec 1991, *Forster PIF9215* (BRI, MEL); Mt Glastonbury, S.F. 242 Glastonbury, 26° 14'S, 152° 27'E, Dec 1991, *Forster PIF9290 & Sharpe* (BRI, K, L, MEL, QRS); S.F. 220 Malmaison, Oakview Forestry, 26° 07'S, 152° 20'E, Mar 2000, *Forster PIF25469 &*

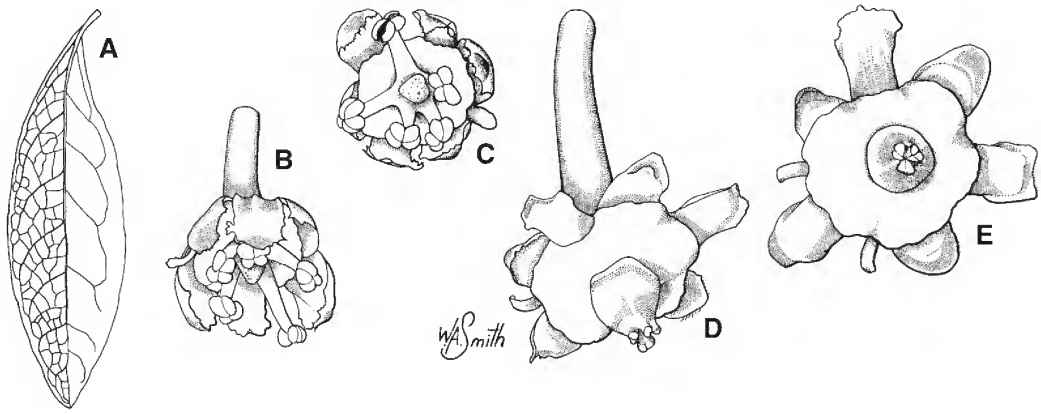

Fig. 6. ***Actephila lindleyi***. A. abaxial leaf surface ×0.5. B. side view of male flower ×6. C. face view of male flower ×6. D. side view of female flower ×6. E. face view of female flower ×6. A from *Forster PIF14262* (BRI); B-E from *Forster PIF24166* (BRI). Del. W. Smith.

Booth (BRI, MEL, QRS). MORETON DISTRICT: Gold Creek, 2 km WNW of North Arm, 26° 30'S, 152° 55'E, Nov 1990, *Forster PIF7581 & Sharpe* (BRI, CANB, K, L, MEL, QRS); 0.5 km SW of McAfees Lookout, S.F. 309, 27° 25'S, 152° 52'E, Feb 1991, *Forster PIF7788 & Bird* (BRI, QRS); F.R. 809, Mt Glorious, D'Aguilar Range, NW of Brisbane, 27° 20'S, 152° 45'E, Dec 2004, *Forster PIF30403 & Jensen* (BRI, L, MEL, NSW); Mary Cairncross Scenic Reserve, Blackall Range, 3 km SE of Maleny, 26° 49'S, 152° 52'E, Dec 2004, *Forster PIF30426 et al.* (BRI, L, MEL, NSW). **New South Wales.** *c.* 10 miles [16 km] WSW of Dungog on the road to Gresford, Nov 1970, *Blaxell & Coveny 3337* (BRI, CANB, NSW); 1 km E of Toolona Lookout, headwaters of Hopping Dicks Creek, 28° 16'S, 153° 10'E, Nov 1982, *Guymer 1807 & Jessup* (BRI); Wiangaree S.F., *c.* 10 miles NE of Wiangaree, 28° 33'S, 153° 06'E, Oct 1966, *Hayes 2534 et al.* (NSW); Wongawilli, S of Wollongong, 34° 28'S, 150° 45'E, Aug 1986, *Mills s.n.* (NSW540765); Border Ranges N.P., Coff Lyon's road, near Border Loop, 28° 20'S, 153° 38'E, May 1986, *Shapcott s.n.* (BRI [AQ451829]); Yessabah Caves near Kempsey, 31° 06'S, 152° 43'E, Aug 1967, *Telford IRT78* (CANB).

***Distribution and habitat*:** *Actephila lindleyi* has the broadest distribution of the Australian species in this genus (twenty 1° grid cells), ranging from slightly north of Townsville south to Wongawilli near Woollongong (**Map 2**). It is a rarely encountered tree at its southern limit (Mills & Jakeman 1995). This species is invariably found in 'dry' rainforests (araucarian microphyll or semi-deciduous, complex notophyll vineforests and semi-evergreen vinethickets) on a variety of substrates derived from andesites, basalts or metamorphics at altitudes between 40 and 500 m. At some localities (e.g. Lamington National Park, Bunya Mountains National Park), this species may be a dominant part of the rainforest understorey (Laidlaw *et al.* 2000; Butler 2003; Kitching *et al.* 2004).

***Notes*:** Airy Shaw (1971, 1981) openly admitted that *A. lindleyi* as he circumscribed it, was "extraordinarily variable....there is need of much more material before the limits of its variation can begin to be understood". In the present account considerable material that was previously identified as *A. lindleyi* is referred to the species *A. flavescens, A. grandifolia, A. traceyi, A. venusta* and *A. vernicosa.*

Chromosome counts of 2n = 40 were recorded for material of *A. lindleyi* collected at Mt Glorious and the Border Ranges (Shapcott 1998).

A probable, undescribed taxon allied to *A. lindleyi* has been collected at Conway Range near Airlie Beach (Vouchers: Eastern catchment of Repulse Creek, Conway N.P., *c.* 3 km W of Woodcutter Bay, 20° 22'S, 148° 47'E, Oct 1993, *McDonald 5834 & Champion* (BRI); Conway S.F., *c.* 9 km SE of Airlie Beach, 20° 20'S, 148° 45'E, Oct 1993, *McDonald 5848 & Champion* (BRI); Conway S.F., *c.* 2 km E of Impulse Creek

crossing, 20° 21'S, 148° 44'E, Feb 1999, *McDonald 6623 & Kemp* (BRI)) where it occurs in 'seasonally dry' rainforest (semi-deciduous, complex notophyll vineforest) fringing watercourses at an altitude of *c.* 60 m on substrates derived from granite. This material differs from *A. lindleyi* in leaf morphology (principally venation expression); however, only fruiting material has been collected so far.

***Conservation status*:** *Actephila lindleyi* is widespread and locally abundant in many of the extant populations. In Queensland this species is present in Boombana, Fairlies Knob, Goodnight Scrub, Kondalilla, Lamington, Main Range, Mapleton Falls, Mt Bauple, Mt Collosseum, Mt Pinbarren and Nicoll Scrub National Parks, Forest Reserves 287, 309, 471 and 1344, State Forests 9, 28, 53, 86, 95, 220, 242, 435, 866, 893 and 1294. In New South Wales it has been recorded from Border Ranges National Park and Wiangaree State Forest.

***Etymology*:** The species is named for John Lindley (1799-1865), one time Professor of Botany at University College, London, and specialist on Orchidaceae (Stearn 1999).

8. Actephila longipedicellata P.I.Forst. **sp. nov.** ab *A. sessilifoliae* Benth. differt lamina folii basi acuta usque cuneata (adversum cordatam usque subcordatam, saepe aspectu amplexicauli propter petiolum brevem), numero majore venarum lateralium (11–15 non 8–11), floribus masculis pedicellis longioribus (25–34 mm adversum 8–11 mm), sepalis majoribus (3.5–5 × 2.5–4 mm adversum 1.8–2.5 × 1.5–1.8 mm), petalis spathulatis (adversum petala obovata usque oblonga) majoribus (2.8–3.5 × 1.3–2.5 mm non 0.8–1.8 × 0.3–1 mm) et disco 5-angulato (adversum discum annularem) et duplo majore (2.4–5 mm diam. adversum 2–2.8 mm).

Typus: Queensland. Cook District: Garraway Creek rockpiles, 12° 45'S, 143° 11'E, 16 April 1988, *P.I. Forster PIF4227 & D.J. Liddle* (holo: BRI [1 sheet + spirit]; iso: DNA, KEP, SAN, SAR).

Actephila sp. (Claudie River BH 7803) (Hyland *et al.* 1999, 2003).

Subshrub or shrub to 4 m high. Indumentum of simple trichomes, uncoloured, entire plant is glabrous unless stated otherwise. Branchlets glossy, cream to green, lenticellate with age. Stipules triangular to triangular-ovate, 0.7–2 mm long, 0.7–1.2 mm wide, glabrous or irregularly ciliate. Leaves alternate or subverticillate, coriaceous, petiolate; petioles 2–8 mm long, 1–2 mm wide, cream to green, lenticellate; lamina length/petiole length ratio 13.6–42.5 (n=78); lamina obovate to oblanceolate, ± flat, 33–195 mm long, 12–68 mm wide, length/width ratio 1.8–3.7 (n=78); base acute to cuneate; tip acute to acuminate, rarely rounded; midrib above slightly raised (height < 5 times the width), pale green, below prominently raised at lamina base (height ± equal to or > width) then decreasing towards apex, pale green-yellow; venation brochidodromous, comprising 11–15 lateral veins per side of midrib and intercostal reticulate veins; upper surface dark green and glossy, lateral and intercostal venation visible; lower surface pale olive-green and glossy, lateral and intercostal venation prominent, only laterals raised, 1–5° vein orders distinct, 6° vein order indistinct, 7° and onwards vein orders obscure; margin entire, flat to slightly recurved, pale yellow. Inflorescence an axillary fascicle 1–4 mm diameter, rarely interpetiolar, single sex or with both male and female flowers. Male flowers: pedicels filiform, 25–34 mm long, 0.5–0.8 mm diameter; sepals 5, ovate, fused for *c.* 1 mm at base, free lobes 3.5–5 mm long, 2.5–4 mm wide; petals 5, spathulate, 2.8–3.5 mm long, 1.3–2.5 mm wide; disk conspicuous, fleshy, *c.* 1 mm high, 4.5–5.5 mm diameter, annular to weakly 5-angled; stamens 5, filaments 3–3.5 mm long, *c.* 0.5 mm diameter, anthers globose-ovoid, 0.4–0.5 mm long, 0.7–0.8 mm wide. Female flowers: pedicels filiform, 20–47 mm long, 0.5–2 mm diameter; sepals 5, ovate to obovate, fused at base for *c.* 1 mm, free lobes 5–6 mm long, 3.5–4.5 mm wide, glabrous or ciliate along entire edge; petals 5, oblong to spathulate, 3.5–5.5 mm long, 1–2.5 mm wide; disk conspicuous, fleshy, *c.* 1.5 mm high, 5.5–7 mm diameter, annular to weakly 5-angled, annular; ovary 2–4 mm long, 2–5.5 mm diameter; styles 3–(5), simple, shortly connate at base, 2–2.5 mm long, stigmas subcapitate. Fruit: pedicels 30–55 mm long, 0.5–1 mm diameter; capsules globose, rounded, 20–25 mm long, 14–17 mm diameter, strongly bullate, green; columella 7–8 mm long. Seeds 11–15 mm long, 7–9 mm wide, hilum 3–4 mm long, caruncle

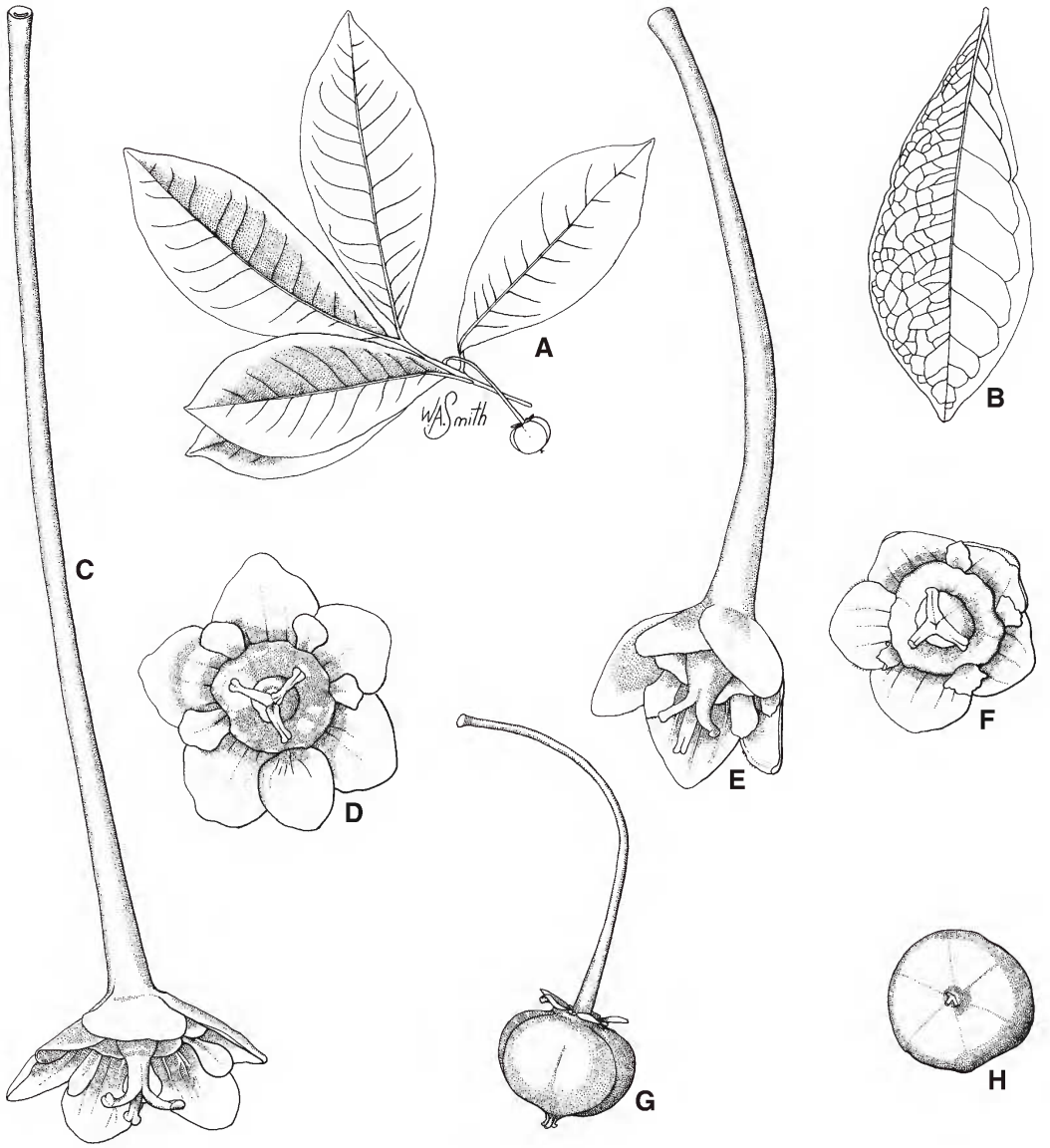

Fig. 7. ***Actephila longipedicellata.*** A. habit of fruiting branch ×0.3. B. abaxial leaf surface ×0.5. C. side view of female flower ×3. D. face view of female flower ×3. E. side view of female flower ×4. F. face view of female flower ×4. G. face view of fruit ×1. H. side view of fruit ×1. A-D, G, H from *Forster PIF15462* (BRI); E, F from *Fell DGF2562* (BRI). Del. W. Smith.

poorly developed, narrow-oblong, 4–6 long, *c.* 0.2 mm wide, cream. **Fig. 7.**

***Additional specimens examined*: Queensland.** Cook District: Tozer Gap, Tozer Range, Jul 1948, *Brass 19449* (BRI); Ridges above Claudie River, 4.5 km NE of Mt Tozer, 12° 44'S, 143° 15'E, May 1992, *Fell DGF2562* (AD, BRI, MEL, QRS); Kennedy Hill Gorge, 12° 28'S, 143° 16'E, Jun 1989, *Forster PIF5411 & Tucker* (BRI); Tozer Range, 12° 44'S, 143° 12'E, Jul 1994, *Forster PIF15462* (BRI, MEL); Claudie River, 12° 45'S, 143° 15'E, Oct 1973, *Hyland 6931* (BRI, QRS); *loc. cit.*, Oct 1974, *Hyland 7803* (BRI, QRS); *loc. cit.*, Nov 1998, *Hyland 16147* (BRI, QRS); cult. Tolga (ex Garraway Creek), 12° 45'S, 143° 11'E, Mar 1996, *Sankowsky 1505* (QRS); *loc. cit.*, Oct 1996, *Sankowsky 1524* (QRS); *loc. cit.*, Apr 1997, *Sankowsky 1557 & Sankowsky* (BRI); *loc. cit.*, Nov 1997, *Sankowsky 1614* (QRS); *loc. cit.*, May 1997, *Sankowsky s.n.* (BRI [AQ654612]); Claudie River, 12° 45'S, 143° 15'E, Nov 1977, *Stocker 1625* (CANB, QRS); Iron Range, Jul 1963, *Volck AFO2647* (QRS).

***Distribution and habitat*:** *Actephila longipedicellata* has been collected in three localities (Garraway Creek and Tozer Gap near Iron Range, and Kennedy Hill) within a single 1° grid cell on far north Cape York Peninsula, Queensland (**Map 5**). Plants grow in the understorey of 'seasonally dry' rainforest (evergreen complex notophyll vineforest) in rocky situations (along creeks or on ridges), with granite boulders in much evidence at altitudes between 20 and 240 m.

***Notes*:** *Actephila longipedicellata* was first collected by Brass in 1948 and collections made prior to 1999 were usually identified as *A. lindleyi*. *Actephila longipedicellata* is similar on morphological grounds (short petioles, long pedicels) to *A. sessilifolia*, but differs from that species in the leaf lamina with an acute to cuneate base (versus cordate to subcordate, often appearing stem clasping due to short petiole); the greater number of lateral veins (11–15 versus 8–11); the male flowers with longer pedicels (25–34 mm versus 8–11 mm), larger sepals (3.5–5 × 2.5–4 mm versus 1.8–2.5 × 1.5–1.8 mm), spathulate petals (versus obovate to oblong) that are larger (2.8–3.5 × 1.3–2.5 mm versus 0.8–1.8 × 0.3–1 mm) and a disk (versus annular) that is twice as large (4.5–5 mm diameter versus 2–2.8 mm).

***Conservation status*:** *Actephila longipedicellata* has a restricted distribution with perhaps as many as three populations. The area of occupancy and the number of individuals within populations are unknown. One population is within Iron Range National Park. Further survey work is required to determine whether this species is deserved of conservation listing. The population at Garraway Creek is under localised threat from destruction of vegetation by tourists and local inhabitats that use the area for short-term recreational camping.

***Etymology*:** The specific epithet is derived from the Latin words *longus* (long) and *pedicellus* (pedicel) and refers to the consistently long flower pedicels in this species.

9. Actephila petiolaris Benth., *Fl. Austral.* 6: 90 (1873). **Type:** Queensland. "Rockingham Bay", *Dallachy s.n.* (holo: K [photo at BRI!]).

Subshrub, shrub or small tree to 8 m high. Indumentum of simple trichomes, fawn or ferruginous, entire plant is glabrous unless stated otherwise. Branchlets glossy, fawn-tan to olive-green, glabrous or with sparse indumentum when young, lenticellate with age. Stipules triangular, 1.2–2 mm long, 0.8–1.5 mm wide. Leaves alternate, coriaceous, petiolate; petioles 9–80 mm long, 1–1.5 mm wide, olive green, glabrous or with sparse indumentum, glabrescent and occasionally lenticellate with age; lamina length/petiole length ratio 2–8.7 (n=106); lamina elliptic-ovate, ovate or obovate, ± flat, 48–190 mm long, 25–90 mm wide, length/width ratio 1.5–3.3 (n=106); base cuneate, obtuse or rounded; tip acute, abruptly acute, acuminate or caudate; midrib above ± flat, dark green, below prominently raised at lamina base (height > width) then decreasing towards apex, pale olive-green; venation brochidodromous, comprising 9–12 lateral veins per side of midrib and intercostal reticulate veins; upper surface dark green and glossy, lateral venation barely visible, intercostal venation obscure; lower surface olive green and glossy, lateral venation prominent and slightly raised, intercostal venation visible but not raised, 1–4° vein orders distinct, 5° vein order indistinct, 6° and onwards vein orders obscure; margin entire, flat, olive-

green. Inflorescence an axillary fascicle 2–4 mm diameter, single sex or with both male and female flowers. Male flowers: pedicels stout, 3–7 mm long, 0.6–0.8 mm diameter; sepals 5, oblong to oblong-ovate, 3–4 mm long, 1.3–2.8 mm wide, apices glabrous or sparsely ciliate; petals absent, or rarely one or two present, oblanceolate, 1.8–2.5 mm long, 0.5–1.2 mm wide, irregularly lacerate at tip; disk conspicuous, fleshy, 0.8–1.2 mm high, 3.5–6 mm diameter, 5-angled; stamens 4 or 5, filaments 2–2.5 mm long, *c.* 0.2 mm diameter, anthers globose-ovoid, 0.2–0.3 mm long, 0.4–0.5 mm wide. Female flowers: pedicels filiform, 9–35 mm long, 0.5–0.8 mm diameter; sepals 5, oblong to oblong-ovate, 1.8–3.2 mm long, 1.8–2 mm wide, apices densely ciliate, occasionally with sparse indumentum down centre of sepal externally; petals absent or rarely one or two present, oblanceolate, 1.2–2 mm long, 0.3–0.5 mm wide; disk conspicuous, fleshy, 1–2 mm high, 3–4.5 mm diameter, 5-angled; ovary 2–4 mm long, 2–5 mm diameter; styles 3, simple, shortly connate at base, 1–1.8 mm long, stigmas subcapitate. Fruit: pedicels 23–30 mm long, *c.* 1.5 mm diameter; capsules depressed-globose, rounded, 10–20 mm long, 15–27 mm diameter, strongly bullate, green; columella 7–9 mm long. Seeds 6–12 mm long, 5–9 mm wide, olive green; hilum 1–2.5 mm long, caruncle poorly developed, narrow-oblong, 1–4 mm long, *c.* 0.2 mm wide, cream. **Fig. 8.**

***Notes*:** There is significant variation in the morphology of the collections referred here to *A. petiolaris*, notably the length of the petiole relevant to the length of the leaf lamina, leaf shape and indumentum colour and density on young foliage. This variation is geographically and ecologically based and is formalised by the recognition of subspecies.

***Etymology*:** The specific epithet is formed from the Latin word *petiolus* (petiole) and alludes to the long petiole of this species.

Key to subspecies of *Actephila petiolaris*

1 Foliage glabrous or with scattered fawn indumentum when young; leaf lamina length/petiole length ratio 2-7.4 . . . . . **A. petiolaris** subsp. **petiolaris**

1: Foliage with sparse ferruginous-brown indumentum when young; leaf lamina length/petiole ratio 5-8.7 . . . . . **A. petiolaris** subsp. **jagonis**

9a. *Actephila petiolaris* subsp. *petiolaris*

Shrub or small tree to 8 m high. Indumentum absent, or fawn. Leaf glabrous or with scattered indumentum when young; leaf lamina length/petiole length ratio 2–7.4 (n=79); lamina elliptic-ovate, rarely obovate.

***Additional specimens examined*: Queensland.** Cook District: Cedar Bay, 15° 47'S, 145° 21'E, Jan 1973, *Dick sub Webb & Tracey 13774* (BRI); Churchill Creek, Churchill L.A., S.F. 143, 16° 34'S, 145° 19'E, Jul 1995, *Forster PIF17208 & Figg* (BRI, QRS); cult. Tolga (ex Churchill Creek near Julatten), 16° 34'S, 145° 19'E, Jan 2002, *Forster PIF28205, PIF28206* (BRI); S.F.R. 675, Mulgrave L.A., 17° 05'S, 145° 42'E, Mar 1980, *Gray 1665, 1668* (BRI, QRS); S.F.R. 675, Little Mulgrave Valley, 17° 06'S, 145° 41'E, Jun 1996, *Gray 6778* (QRS); S.F.R. 675, 17° 05'S, 145° 40'E, Nov 1976, *Hyland 3481RFK* (QRS), *3482RFK* (QRS), *3483RFK* (CANB, QRS); S.F.R. 675 Grafton, Mulgrave L.A., 17° 05'S, 145° 42'E, Nov 1988, *Hyland 25619RFK* (QRS); S.F.R. 675, East Mulgrave L.A., 17° 05'S, 145° 40'E, Dec 1976, *Hyland 9249* (QRS); S.F.R. 675 Grafton, Mulgrave L.A., 17° 05'S, 145° 42'E, Nov 1988, *Hyland 13719* (CANB, QRS); Cooper Creek, east of Turpentine road, 16° 09'S, 145° 24'E, Jun 2001, *Jago 6004* (BRI); Coopers Creek, via Daintree, Jun 1969, *Mazlin AFO4347* (QRS); cult. Tolga (ex Churchill Creek), Nov 1999, *Sankowsky 1680, 1681 & Sankowsky* (QRS); *loc. cit.*, Dec 2005, *Sankowsky 2554 & Sankowsky* (BRI); cult. Tolga (ex S.F.R. 675 Grafton, Mulgrave L.A., 17° 05'S, 145° 42'E), Dec 2004, *Sankowsky 2555 & Sankowsky* (BRI); Coopers Creek, Cape Tribulation, 16° 10'S, 145° 25'E, Oct 1997, *Small 14* (QRS); Gap Creek, *c.* 8 miles [13.3 km] back from Ayton, May 1969, *Smith 14444* (BRI); Bloomfield, May 1969, *Volck AFO4311* (QRS).

***Distribution and habitat*:** *Actephila petiolaris* subsp. *petiolaris* is endemic to the 'Wet Tropics'

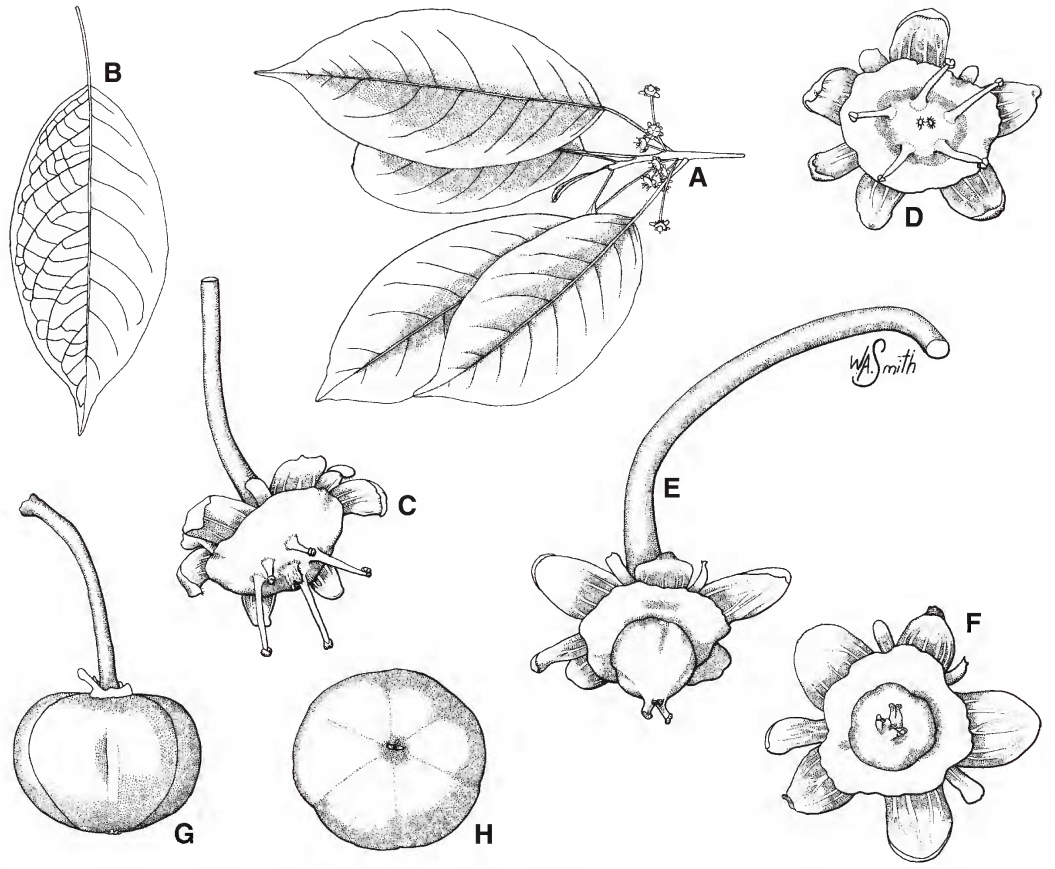

Fig. 8. ***Actephila petiolaris*** subsp. ***petiolaris.*** A. habit of flowering branch ×0.5. B. abaxial leaf surface ×0.5. C. side view of male flower ×6. D. face view of male flower ×6. E. side view of female flower ×6. F. face view of female flower ×6. G. side view of fruit ×2. H. face view of fruit ×2. A-D from *Forster PIF28205* (BRI); E, F from *Forster PIF28206* (BRI); G, H from *Forster PIF17208* (BRI). Del. W. Smith.

bioregion of north-eastern Queensland with a northern limit at Gap Creek and a southern limit in the Little Mulgrave Valley (**Map 3**). Despite the different labelling of collections, there are only four localities known, *viz.* Cedar Bay - Bloomfield – Gap Creek, Churchill Creek, Cooper Creek and S.F.R. 675. Plants occur at altitudes between 20–300 m in the understorey of 'wet' rainforest (evergreen, complex mesophyll or notophyll vineforest) on alluvium derived from metamorphics along watercourses at altitudes between 100 and 440 m.

***Notes*:** A number of collections are provisionally placed here, notably those from Cooper Creek north of the Daintree River. These particular collections (*Mazlin AFO4347*, *Jago 6004* and *Small 14*) have particularly large leaves with caudate leaf apices and show some similarities to *A. foetida*. They lack the indumentum and pattern of interlateral venation that is present in *A. foetida*, but share its habit (small shrub) and leaf size variation. Leaf size appears to be highly variable in *A. petiolaris* subsp. *petiolaris*, but this is not particularly unusual in understorey trees and shrubs that are subjected to variable regimes of light.

***Conservation status*:** *Actephila petiolaris* subsp. *petiolaris* is present in several National Parks (Cedar Bay, Daintree) and two State Forests (143, 675). There is no information available as to the area of occupancy or the number of individuals within populations. It is not considered to be under threat.

9b. Actephila petiolaris subsp. **jagonis** P.I.Forst., **subsp. nov.** a forma typica *Actephilae petiolaris* Benth. frondescentia juvenile vestita indumento sparso ferrugineo (adversum glabram vel indumentum dissitum hinnuleum juvenile), lamina obovata rarius ellipticoovata (adversum ovatam rarius obovatam) et folii ratione longitudinis laminae ad longitudine petiolo majore (5–8.7 non 2–7.4) distinguitur.

Typus: Queensland. Cook District: on track from Power Station, to Mt Surprise Creek [Barron Gorge], 16° 51'S, 145° 38'E, 23 January 1993, *R.L. Jago 2030* (holo: BRI [1 sheet]).

Subshrub to 2 m tall. Indumentum ferruginous-brown. Leaf with sparse indumentum when young; leaf lamina length/ petiole length ratio 5–8.7(n=27); lamina obovate, rarely elliptic-ovate.

***Additional specimens examined*: Queensland.** Cook District: Barron Gorge, 16° 50'S, 145° 38'E, Feb 1994, *Cooper WWC797 & Cooper* (QRS); Barron Gorge National Park, 16° 51'S, 145° 38'E, Feb 1996, *Forster PIF18644 & Jago* (BRI, QRS); N.P.R. 880, Parish of Cairns [Barron Gorge], 16° 51'S, 145° 38'E, Apr 1994, *Hyland 15085* (QRS).

***Distribution and habitat*:** *Actephila petiolaris* subsp. *jagonis* is known only from the Barron Gorge National Park near Cairns in the 'Wet Tropics' of north-eastern Queensland (**Map 3**). This locality is within the overall geographical range of *A. petiolaris* but is disjunct from the populations of *A. petiolaris* subsp. *petiolaris* and occurs in a different and much 'drier' rainforest type. Plants occur on steep slopes in semi-deciduous microphyll vineforest on substrates derived from metamorphics at altitudes between 100 and 330 m.

***Notes*:** This taxon is included as a subspecies of *A. petiolaris* with some reservations. Flowers of this plant have not been seen and it may well prove to be specifically distinct from *A. petiolaris* subsp. *petiolaris* that is a larger, generally glabrous plant, with generally longer leaf petioles and leaf laminas that are nearly always elliptic-ovate (versus nearly always obovate). The type collection of *A. petiolaris* subsp. *jagonis* has a single, badly mangled fruit. This fruit appears smaller than those found on *A. petiolaris* subsp. *petiolaris*, but until better material is obtained, the uniqueness of the size disparity cannot be determined.

***Conservation status*:** The only known population of this taxon is within Barron Gorge National Park. Survey of the population is required to determine the area of occupancy, the number of plants that are present and any threats that they may face. Due to its occurrence in a single population this subspecies is probably deserved of conservation listing.

***Etymology*:** *Actephila petiolaris* subsp. *jagonis* is named to honour R.L. (Bob) Jago of Cairns, plant collector and amateur botanist extraordinaire. Bob has contributed over 2000 herbarium collections to the Queensland Herbarium and was the first to collect this plant.

10. Actephila plicata P.I.Forst., **sp. nov.** ab *A. latifolia* Benth. folii lamina plicata non plana margine revoluto non plano, floribus foemineis sepalis longioribus (2.8–3.5 mm adversum 2–2.5 mm), petalis oblongis usque oblanceolatis (in illa obovatis) et majoribus (2.5–3 x *c.* 0.8 mm adversum 1–2 × 0.5–1 mm) et frutice 5-lobato (in illa rotundato) differt.

Typus: Queensland. North Kennedy District: Mt Dryander, left branch Dryander Creek, 15 km N of Proserpine, 20° 16'S, 148° 34'E, 6 February 2004, *P.I. Forster PIF29943, R. Jensen & M.C. Tucker* (holo: BRI [1 sheet + spirit]; iso: MEL, NSW).

Shrub or small tree to 6 m high. Indumentum of simple trichomes, uncoloured, entire plant is glabrous unless stated otherwise. Branchlets glossy, brown, lenticellate with age. Stipules ovate to triangular-ovate, 1–1.8 mm long, 1–1.8 mm wide, irregularly crenate. Leaves alternate or subverticillate, coriaceous, petiolate; petioles 3–25 mm long, 1.5–2.5 mm wide, olive-green, lenticellate; lamina length/petiole length ratio 6–20 (n=110); lamina elliptic to obovate, plicate, 37–207 mm long, 20–75 mm wide, length/width ratio 1.6–3.3 (n=110); base acute to cuneate; tip acute to rounded; midrib above ± flat, dark green, below prominently raised at lamina base (height > width) then decreasing towards apex, pale olive-green; venation brochidodromous, comprising 10–14 lateral veins per side of midrib

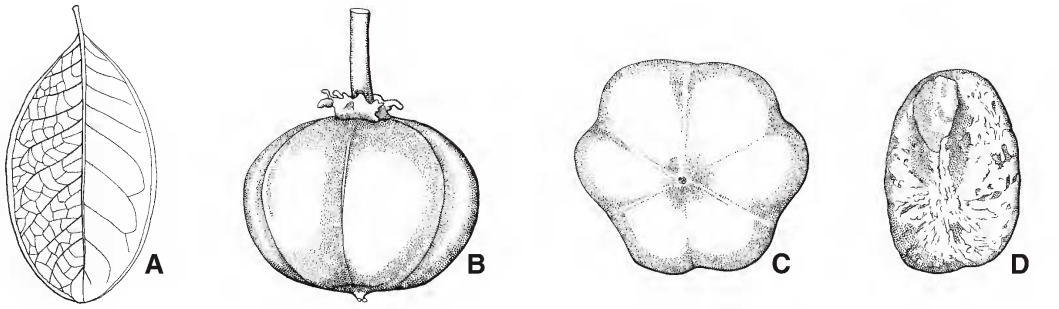

Fig. 9. ***Actephila plicata.*** A. abaxial leaf surface ×0.5. B. side view of fruit ×1.5. C. face view of fruit ×1.5. D. ventral view of seed ×3. A, D from *Cooper WWC1576* (BRI); B, C from *Forster PIF29943* (BRI). Del. W. Smith.

and intercostal reticulate veins; upper surface dark green and glossy, lateral and intercostal venation visible; lower surface pale olive-green and matt, lateral and intercostal venation prominent with laterals raised, 1–3° vein orders distinct, 4° vein order indistinct, 5° and onwards vein orders obscure; margin entire, revolute, pale olive-green. Inflorescence an axillary fascicle 2–8 mm diameter, rarely interpetiolar, single sex or with both male and female flowers. Male flowers not seen. Female flowers: pedicels stout, 8–10 mm long, 1–1.5 mm diameter; sepals 5, obovate, 2.8–3.5 mm long, 1.2–2.2 mm wide, ciliate in patch at the apices; petals absent or one or two present, oblong or oblanceolate, 2.5–3 mm long, *c.* 0.8 mm wide; disk conspicuous, fleshy, 1–1.5 mm high, 4–5.5 mm diameter, 5-angled; ovary, styles and stigmas not seen. Fruit: pedicels 6–10 mm long, 1–1.5 mm diameter; capsules depressed-globose, strongly pentalobate, 12–14 mm long, 15–19 mm diameter, strongly bullate, green; columella 8–12 mm long. Seeds 7–11 mm long, 5–8.5 mm wide, pale tan and fawn to olive-green and tan; hilum 2–5 mm long, caruncle narrow oblong, 2–3 mm long, 0.5–1 mm wide, cream. **Fig. 9.**

***Additional specimens examined*: Queensland.** North Kennedy District: S.F. 387, 2 km SSW of dam wall on Proserpine River, 20° 23'S, 148° 22'E, May 1991, *Forster PIF8318 & McDonald* (BRI, K, L, MEL, QRS); Mt Dryander S.F., Dryander Creek left branch, 20° 16'S, 148° 34'E, Oct 1999, *Forster PIF24997 & Booth* (BRI, MEL, QRS); headwaters of Dryander Creek, Mt Dryander, 20° 15'S, 148° 35'E, Oct 1969, *Webb & Tracey 10040* (BRI). South Kennedy District: Scawfell Island, 20° 53'S, 149° 37'E, Nov 1986, *Batianoff 6175 & Hegerl* (AD, BRI); Scawfell Island National Park, 20° 53'S, 149° 37'E, Nov 1986, *Batianoff 6303* (BRI); Dugong Inlet, Whitsunday Island, 20° 15'S, 148° 57'E, Sep 1990, *Batianoff 900971 & Batianoff* (BRI); Cape Hillsborough National Park, 20° 15'S, 149° 02'E, Aug 1992, *Batianoff 920889* (BRI); Puritan Bay, Conway National Park, 20° 28'S, 148° 53'E, May 1994, *Batianoff 94053 & Dillewaard* (BRI); Keswick Island, Connie Bay, 20° 54'S, 149° 24'E, Sep 1996, *Batianoff 9609111 & Champion* (BRI); Cape Hillsborough N.P., along track to Hidden Valley, 20° 55'S, 149° 02'E, Sep 2001, *Cooper WWC1576 & Cooper* (BRI); R299 Conway, Repulse Bay, Jun 1981, *Dansie AFO5230* (QRS).

***Notes*:** Male flowers have not been examined for this species. There are morphological obvious similarities between *A. plicata* and *A. latifolia* that occurs further north; however, the former differs from *A. latifolia* in the leaf lamina being plicate (versus flat) with a revolute margin (versus flat); the female flowers with longer sepals (2.8–3.5 mm versus 2–2.5 mm), petals that are oblong to oblanceolate (versus obovate) and larger (2–5-3 × *c.* 0.8 mm versus 1–2 × 0.5–1 mm) and the strongly pentalobate fruit (versus rounded).

***Distribution and habitat*:** *Actephila plicata* is endemic to central Queensland with a northern limit at Mt Dryander and a southern limit at Cape Hillsborough National Park where it occurs in coastal areas of the mainland and on offshore continental islands (**Map 5**). Plants occur in 'dry' rainforest and vinethicket (littoral microphyll vineforest, semi-deciduous, complex notophyll vineforest) on granite substrates from near sea level to 100 m altitude.

***Conservation status*:** *Actephila plicata* is present in several National Parks (Cape Hillsborough, Conway, Dryander, Scawfell Island) and two State Forests (387, 432). There is no information available as to the area of occupancy or the number of individuals within populations. It is not considered under threat.

***Etymology*:** The specific epithet is formed from the Latin word *plicatus* (folded) and alludes to the appearance of the leaf lamina.

11. Actephila sessilifolia Benth., *Fl. Austral.* 6: 90 (1873). **Type:** Queensland. Port Curtis District: ["Shrub of 4-6 ft at the Caves Mountain, 5 miles west of Morinish"], *Thozet s.n.* (lecto: MEL; isolecto: K [with no locality data, photo at BRI], *fide* Airy Shaw (1980b: 217).

***Illustrations*:** Calvert *et al.* (2005: 12).

Subshrub or shrub to 6 m high. Indumentum of simple trichomes, uncoloured or ferruginous, entire plant is glabrous unless stated otherwise. Branchlets glossy, fawn to ferruginous brown, lenticellate with age. Stipules triangular, 1–1.2 mm long, 0.8–1 mm wide, occasionally ciliate. Leaves alternate or subverticillate, coriaceous, petiolate, appearing sessile due to shape of lamina base; petioles 1–7 mm long, 1–2 mm wide, grey-fawn, lenticellate; lamina length/petiole length ratio 12.5–125 (n=222); lamina elliptic, obovate or oblanceolate, rarely orbicular, ± flat, 19–152 mm long, 9–60 mm wide, length/width ratio 1.5–3.6 (n=222); base cordate to subcordate, often falsely stem clasping due to short petiole; tip acute to rounded, rarely caudate or retuse; midrib above ± flat or slightly raised (height < 5 times the width) pale green, below slightly raised at lamina base (height ± equal to width) then decreasing towards apex, pale olive-green; venation brochidodromous, comprising 8–11 lateral veins per side of midrib and intercostal reticulate veins; upper surface dark green and glossy, lateral venation visible, intercostal venation weakly visible to ± obscure; lower surface pale olive-green and glossy, lateral and intercostal venation visible, but weakly raised, 1° and 2° vein orders distinct, 3° vein order indistinct, 4° and onwards vein orders obscure; margin entire, weakly revolute, yellow-green. Inflorescence an axillary fascicle 1–2 mm diameter, single sex or with both male and female flowers. Male flowers: pedicels filiform, 6–8 mm long, 0.3–0.5 mm diameter; sepals 5, obovate to ovate, 1.8–2 mm long, 1.5–1.8 mm wide, ciliate on upper margin; petals absent or 1–5, oblong to obovate, 0.8–1.8 mm long, 0.3–1 mm wide; disk conspicuous, fleshy, 0.4–0.5 mm high, 2–2.8 mm diameter, annular; stamens 5, filaments 1–1.2 mm long, *c.* 0.2 mm diameter, anthers globose-ovoid, 0.3–04 mm long, 0.4–0.5 mm wide. Female flowers: pedicels filiform, 20–32 mm long, 0.1–0.2 mm diameter; sepals 5, obtuse to ovate, 2.1–4 mm long, 1.2–2.8 mm wide, glabrous or ciliate towards the apices; petals 1–5, oblanceolate, oblong or obovate, 1.2–1.4 mm long, 0.3–1 mm wide; disk conspicuous, fleshy, 0.8–1 mm high, 2.8–4 mm diameter, 5-angled; ovary 2–2.5 mm long and 2–4 mm diameter; styles 3, simple, shortly connate at base, 1.5–1.8 mm long, stigmas subcapitate. Fruit: pedicels 22–36 mm long, *c.* 0.5 mm diameter; capsules depressed-globose to subglobose, rounded, 9–11 mm long, 13–16 mm diameter, weakly to strongly bullate, green to green-black; columella 4–7 mm long. Seeds 6–9 mm long, 4.5–8 mm wide, olive green or olive

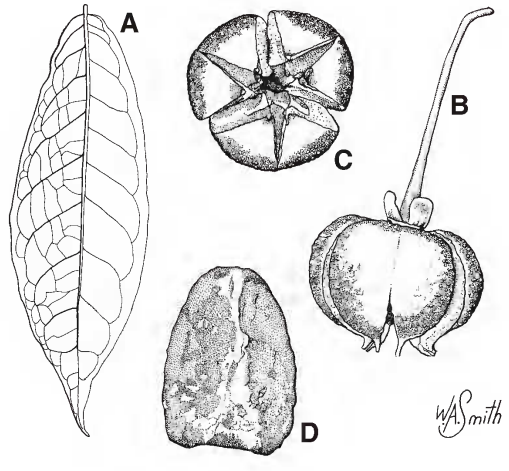

Fig. 10. ***Actephila sessilifolia.*** A. abaxial leaf surface ×0.25. B. side view of fruit ×1.5. C. face view of dehiscing fruit ×1.5. D. ventral view of seed ×3. All from *Forster PIF8113* (BRI). Del. W. Smith

green and dark green in irregular patterns; hilum 2–3.5 mm long, caruncle narrow-oblong, 1.5–5 mm long, 0.5–1 mm wide, cream. **Fig. 10.**

***Selected specimens examined*: Queensland.** North Kennedy District: Emmett Creek, Bowling Green Bay National Park, S of Townsville, Aug 1991, *Bean 3605* (BRI); Mt Burrumbush, Bowling Green Bay National Park, S of Townsville, 19° 28'S, 147° 05'E, Aug 1991, *Bean 3658* (BRI); Lower slopes of Mt Quandong, c. 21 km SW of Proserpine, 20° 29'S, 148° 24'E, May 2002, *Champion 1843 et al.* (BRI); Emmett Creek, Saddle Mountain, 19° 26'S, 147° 02'E, Jul 1995, *Cumming 13611* (BRI); Mt Cataract, W of Townsville, 19° 17'S, 146° 30'E, Oct 1996, *Cumming 15223* (BRI); Mt Quandong, Proserpine Valley, May 1982, *Dansie AFO5173* (QRS); Seaview Range, Apr 1947, *Flecker N.Q.N.C.10880* (QRS); N.P.R. 629, Paluma Range, Rollingstone Creek (West Branch) off Pace road, 19° 04'S, 146° 21'E, Dec 2003, *Ford et al. 4222* (QRS); Dryander Creek left branch, SE slope of Mt Dryander, 20° 16'S, 148° 34'E, Jun 1989, *Forster PIF5127 et al.* (BRI); Elliott Toe, Bowling Green Bay National Park, 9 km NNE of Woodstock, 19° 31'S, 146° 52'E, May 1991, *Forster PIF8361 & Bean* (BRI, QRS); lower western slopes of Mt Dryander, 20° 15'S, 148° 33'E, Jul 1974, *Moriarty 1866* (QRS); Gregory Creek, 20° 16'S, 148° 36'E, *Perry s.n.* (BRI [AQ566535]). South Kennedy District: N of Pine Mt, 8 km NNW of Marlborough, 22° 45'S, 149° 51'E, Jul 1997, *Fensham 3282* (BRI); T.R. 179 Kalvin, 6 km W of Koumala, 21° 36'S, 149° 11'E, Apr 1991, *Forster PIF8032 & McDonald* (BRI, MEL, QRS); T.R. 179 Kalvin, 6 km WSW of Koumala, 21° 37'S, 149° 10'E, Apr 1991, *Forster PIF8045 & McDonald* (BRI); Coffee Creek, NE base of Mt Jukes, 20° 59'S, 148° 57'E, Apr 1991, *Forster PIF8113 & McDonald* (BRI); Mt Adder, southern base of Mt Jukes, 20° 59'S, 148° 55'E, Apr 1991, *Forster PIF8118 & McDonald* (BRI, MEL, QRS); S.F. 658 Carawatha, 20° 47'S, 148° 34'E, Apr 1991, *Forster PIF8198 & Tucker* (BRI, K, MEL, QRS); S.F. 658 Carawatha, 20° 47'S, 148° 34'E, Jun 1995, *Forster PIF16724 & Tucker* (BRI, QRS); Headwaters of Coffee Creek, eastern side of Mt Jukes (N.P. 616 Ossa), 21° 02'S, 148° 55'E, Nov 1989, *McDonald 4401 et al.* (BRI); St Helen's Gap, between Mirani & Calen, 21° 00'S, 148° 42'E, Nov 1989, *McDonald 4510 et al.* (BRI, QRS); headwaters of Cameron Creek, E foothills of Clarke Range, *c.* 6 km NW of Koumala, 21° 34'S, 149° 11'E, Jun 1994, *McDonald 5983 & Champion* (BRI). Leichhardt District: S.F. 82 Connors, headwaters of East Funnel Creek, 21° 34'S, 149° 11'E, Jun 1994, *McDonald 5976 & Champion* (BRI). Port Curtis District: S.F. 878, W of Rockhampton, 23° 18'S, 150° 09'E, Jul 1993, *Fensham 1080* (BRI); Mt Larcom, 5 km NW of Yarwun, 23° 48'S, 151° 05'E, Jan 1994, *Forster PIF14646* (BRI); Curtis Island, 23° 32'S, 151° 06'E, Sep 1994, *Thomas s.n.* (BRI [AQ582433], NSW); 25 km NNW of Gladstone, 23° 42'S, 151° 03'E, Feb 1997, *Thompson GLA13 & Turpin* (BRI); Rundle Range State Forest, *c.* 10 miles [16.7 km] SE of Port Alma near O'Connor Creek, near mouth of Fitzroy River, 23° 40'S, 150° 59'E, May 1971, *Webb & Tracey 10462A* (BRI, MEL). Burnett District: McLaughlin's road, Yarrol Scrub, 21 km E of Monto, 24° 53'S, 151° 19'E, Dec 2004, *Forster PIF30482 & Beard* (A, BRI, L, MEL, MO, NE, NSW). Wide Bay District: Kirbys Road, Bundaberg, 24° 49'S, 152° 23'E, Sep 1999, *Forster PIF24923 & Schmitt* (BRI).

***Distribution and habitat*:** This species is much more widespread than thought by Airy Shaw (1980b) who examined material from only three localities. *Actephila sessilifolia* has a known range from the Paluma Range, west of Townsville, south to Yarrol near Monto (**Map 3**). Plants are usually locally common in the understorey of 'dry' rainforest (semi-deciduous, complex to simple, mesophyll to notophyll vineforest) or more rarely vinethickets (semi-evergreen vinethicket), on alluvium or rocky situations, on substrates derived from basalt, granite or metasediments at altitudes between 30 and 490 m.

***Notes*:** Due to the cordate nature of the leaf base in *Actephila sessilifolia*, the shortly petiolate leaves give the impression that the leaves are sessile. This character combination is unique within *Actephila*. Although this character state is approached in some specimens of *A. longipedicellata*, this latter species does not have a cordate base to the leaf lamina.

***Conservation status*:** *Actephila sessilifolia* is present in Bowling Green Bay, Mt O'Connell, Pioneer Peaks and Rundle Range National Parks and State Forests 55, 82, 179, 207, 658 and 878. Many of the populations are small and fragmented due to land clearing, fire incursions and competition from weeds. The populations in the southern part of the known distribution range are small and not in conservation reserves. There is no information available as to the area of occupancy or the numbers of individuals within populations. This species is not considered threatened although it is currently listed as *Rare* under the *NCA*.

***Etymology*:** The specific epithet is formed from the Latin words *sessili* (sessile, stalkless) and –*folius* (leaves) and alludes to the superficial appearance of the foliage.

12. Actephila traceyi P.I.Forst., **sp. nov.** ab *A. lindleyi* (Steud.) Airy Shaw folii lamina numero majore venarum lateralium (11–16 non 7–12), floribus masculis pedicellis longissimis (5–16 non 1.5–5 mm), sepalis ovato-spathulatis (adversum sepala oblonga usque ovata) et longioribus (3.5–5 non 1–3 mm), disco 5-angulato (in illa rotundato), frutice majore (11–15 × 16–24 mm adversum 9–12 × 11–13.5 mm) et seminibus majoribus (10–14 × 7–12 adversum 6–7 × 5–6.5) pallide olivaceis usque olivaceis (non atro-olivaceis) differt.

Typus: Queensland. Cook District: Leo Creek area, Timber Reserve 14, McIlwraith Range, 13° 45'S, 143° 23'E, 21 June 1995, *P.I.Forster PIF16894* (holo: BRI [1 sheet + spirit]; iso: MEL).

Actephila sp. (Rocky River G.C.Stocker 1042) (Forster & Henderson 1997: 70; Forster & Halford 2002: 68).

Subshrub or shrub to 3 m high. Indumentum of simple trichomes, uncoloured, entire plant is glabrous unless stated otherwise. Branchlets glossy, fawn-tan, lenticellate with age. Stipules narrow-triangular to triangular, 0.5–1.8 mm long, 0.8–1 mm wide. Leaves alternate, subopposite or subverticillate, coriaceous, petiolate; petioles 3–23 mm long, 1–1.5 mm wide, deeply grooved on top with distinct rim to 0.5 mm high, yellow-green, lenticellate with age; lamina length/petiole length ratio 6.2–18.6 (n=128); lamina obovate to oblanceolate, rarely elliptic-ovate, ± flat, 55–170 mm long, 23–66 mm wide, length/width ratio 1.7–3.2 (n=128); base acute to cuneate; tip acute to acuminate, rarely rounded; midrib above slightly raised (height < 5 times the width), yellow-green, below strongly raised at lamina base (height ± equal to width) then decreasing towards apex, yellow; venation brochidodromous, comprising 11–16 lateral veins per side of midrib and intercostal reticulate veins; upper surface dark green and glossy, lateral and intercostal venation visible; lower surface pale yellow-green and glossy, lateral and intercostal venation prominent, slightly raised, 1–3° vein orders distinct, 4° vein order indistinct, 5° and onwards vein orders obscure; margin entire, flat, yellow-green. Inflorescence an axillary fascicle 2–4 mm diameter, single sex or with both male and female flowers. Male flowers: pedicels filiform, 5–16 mm long, 0.6–1.2 mm diameter; sepals 5, ovate-spathulate, 3.5–5 mm long, 2–4 mm wide, ciliate in dense apical patch and with occasional marginal cilia; petals absent or 1, narrow-oblong to oblong-spathulate, 1–2 mm long, 0.2–0.8 mm wide; disk conspicuous, fleshy, 1–1.8 mm high, 4–6 mm diameter, 5-angled; stamens 5, filaments 2.5–3.8 mm long, 0.2–0.3 mm diameter, anthers globose-ovoid, 0.4–0.8 mm long, 0.2–0.5 mm wide. Female flowers: pedicels filiform, 10–22 mm long, 0.7–1 mm diameter; sepals 5, spathulate, 3.5–4 mm long, 2.2–3 mm wide, glabrous; petals absent; disk conspicuous, fleshy, 1.5–2 mm high, 5–6 mm diameter, annular; ovary not seen; styles 3, simple, shortly connate at base, *c.* 2 mm long, stigmas subcapitate. Fruit: pedicels 15–35 mm long, 0.7–1 mm diameter; capsules depressed-

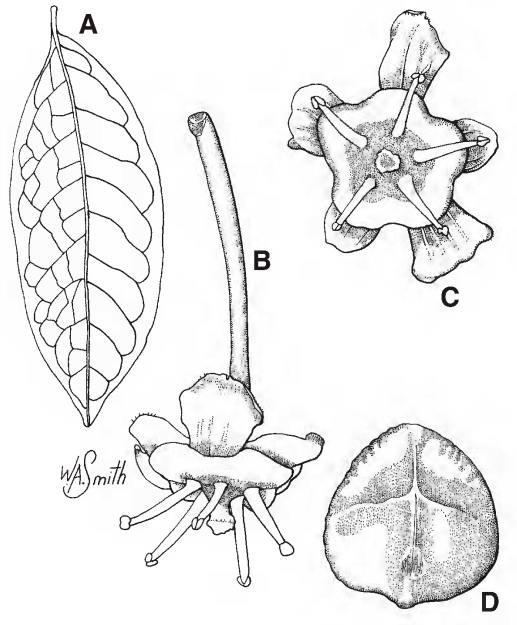

Fig. 11. ***Actephila traceyi.*** A. abaxial leaf surface ×0.5. B. side view of male flower ×6. C. face view of male flower ×3. D. ventral view of seed ×2. A from *Forster PIF10607* (BRI), B, C from *Tucker 3006* (BRI), D from *Stocker 1042* (BRI). Del. W. Smith.

globose, rounded, 11–15 mm long, 16–24 mm diameter, strongly bullate, green; columella 7–11 mm long. Seeds 10–14 mm long, 7–12 mm wide, pale olive tan to olive green; hilum 3–5 mm long, caruncle narrow-oblong, 2–4 mm long, *c.* 0.5 mm wide, cream. **Fig. 11.**

***Additional specimens examined*: Queensland.** Cook District: Between Chester River & Leo Creek, 13° 39'S, 143° 26'E, Jul 1978, *Butler 299* (CANB); Gorge of the Chester River, eastern fall of McIlwraith Range, 13° 41'S, 143° 24'E, Jul 1978, *Clarkson 2349* (BRI); Rocky River, 13° 49'S, 143° 28'E, Aug 1997, *Cooper WWC56 & Jensen* (QRS); T.R. 14, Leo Creek Mine area, McIlwraith Range, 13° 44'S, 143° 22'E, Jun 1992, *Forster PIF10164 et al.* (BRI, QRS); Rocky River Scrub, Silver Plains Station, 13° 49'S, 143° 27'E, Jun 1992, *Forster PIF10607 & Tucker* (BRI, MEL, QRS); Lower Station Creek Gorge, McIlwraith Range, 13° 57'S, 143° 19'E, Jun 1997, *Forster PIF21281 et al.* (BRI, MEL, NE); Rocky River, 13° 55'S, 143° 30'E, Sep 1971, *Hyland 5477* (BRI, QRS); T.R. 14 Massy, 13° 52'S, 143° 23'E, Nov 1980, *Hyland 10899* (BRI, CANB, QRS); *loc. cit.*, Nov 1980, *Hyland 10899* (BRI, QRS); McIlwraith Range, near the head of South Massey Creek, 13° 54'S, 143° 19'E, *Le Cussan 227* (QRS); cult. Tolga (ex Leo Creek, track to old mine, 13° 44'S, 143° 22'E), Dec 2004, *Sankowsky 2556 & Sankowsky* (BRI); cult. Tolga (ex Rocky River, 13° 49'S, 143° 27'E), Dec 2004, *Sankowsky 2558 & Sankowsky* (BRI); McIlwraith Range, Oct 1962, *Smith 11789* (BRI); T.R. 14, Rocky River area, 13° 40'S, 143° 25'E, Sep 1973, *Stocker 1042* (BRI, QRS); cult. Kholo (ex Leo Creek, McIlwraith Range, 13° 44'S, 143° 22'E), Jan 2004, *Tucker 3006* (BRI); cult. Kholo (ex Rocky River, Silver Plains, 13° 49'S, 143° 27'E), Jan 2004, *Tucker 4375* (BRI); T.R. 14, McIlwraith Range, 13° 45'S, 143° 20'E, Jul 1977, *Unwin 383* (QRS); Goanna Creek, E of McIlwraith Range, Nov 1956, *Webb 3155* (BRI); Rocky River on eastern foothills of McIlwraith Range, 13° 47'S, 143° 25'E, Oct 1969, *Webb & Tracey 9341 & 9438* (BRI); headwaters of Lankelly Creek on western fall of McIlwraith Range, 13° 52'S, 143° 20'E, Oct 1969, *Webb & Tracey 9554* (BRI); North western fall of McIlwraith Range at head of Peach Creek, 13° 46'S, 143° 16'E, Oct 1969, *Webb & Tracey 9817* (BRI); Lankelly Creek on western fall of McIlwraith Range, 13° 54'S, 143° 20'E, Jun 1971, *Webb & Tracey 11487* (BRI).

***Distribution and habitat*:** *Actephila traceyi* is restricted to the McIlwraith Range on far northern Cape York Peninsula, where it has been found in the catchments of Goanna, Leo, Massey, Peach and Station Creeks and the Chester and Rocky Rivers (**Map 5**). Plants grow at altitudes between 100 and 380 m in 'seasonally dry' rainforest (semi-deciduous, complex notophyll to mesophyll vineforest) along watercourses on alluvium derived from granites or metamorphics or a combination of the two substrates.

***Notes*:** Herbarium collections of *Actephila traceyi* have been usually identified as *A. lindleyi*; however, it differs from that species in the leaf lamina with a greater number of lateral veins (11–16 versus 7–12); the male flowers with much longer pedicels (5–16 versus 1.5–5 mm), sepals that are ovate-spathulate (versus oblong to ovate) and longer (3.5–5 versus 1–3 mm), a disk that is 5-angled (versus rounded); larger fruit (11–15 × 16–24 mm versus 9–12 × 11–13.5 mm); and larger seeds (10–14 × 7–12 mm versus 6–7 × 5–6.5 mm) that are pale olive-green to olive-green (versus dark olive-green).

A probable, undescribed taxon allied to *A. traceyi* has been collected at Bolt Head, Temple Bay and the Nesbit River (Vouchers: 4.5 km SW of the Nesbit River mouth, 57 km NE of Coen, Silver Plains, 13° 13'S, 143° 32'E, Aug 1993, *Fell DGF3448 et al.* (BRI, L); Bolt Head, Temple Bay, 12° 14'S, 143° 04'E, Jun 1996, *Forster PIF19409 et al.* (BRI); North of Beach road, Bolt Head, 12° 15'S, 143° 05'E, Jun 1996, *Gray 6887* (BRI, QRS)) where it occurs in semi-deciduous notophyll vineforest on stabilised sand dunes. These sterile collections differ from *A. traceyi* in the fewer lateral veins in the leaves.

***Conservation status*:** *Actephila traceyi* is commonly encountered throughout its known, albeit restricted range. There is no information available on the area of occupancy or the number of individuals within populations. Populations are not present in any conservation reserves, but are not considered under threat.

***Etymology*:** *Actephila traceyi* is named to honour J.G. (Geoff) Tracey (1930–2004), pioneer ecologist, explorer and plant collector for CSIRO in Australian rainforests. Geoff contributed over 10,000 herbarium collections to the Queensland Herbarium and elsewhere.

13. Actephila venusta P.I.Forst., **sp. nov.** ab *A. lindleyi* (Steud.) Airy Shaw venis in folii lamina abaxiali usque ad tantum ordinibus 1–2 (adversum ordines 1–3), floribus pedicellis longioribus (flores masculi: 5–14 adversum 1.5–5 mm, foeminei: 13–44 adversum 2–14 mm), sepalis ad apicibus non cucullatis (adversum cucullata), disco floris masculi 5-angulato (in illa rotundato), disco floris foeminei maximo (1–1.8 × 4–6 mm adversum 0.5–1 × 2–4 mm) differt.

Typus: Queensland. Cook District: Possum Scrub, road to Stones Crossing from Weipa, 12° 27'S, 142° 09'E, 8 December 1993, *P.I. Forster PIF14372* (holo: BRI [3 sheets + spirit]; iso: A, AD, CANB, DNA, K, L, MEL, NSW).

Actephila sp. (Possum Scrub P.I.Forster PIF14372) (Forster & Henderson 1997: 70; Forster & Halford 2002: 68).

Actephila sp. (Lockerbie WWC 817) (Hyland *et al.* 1999, 2003).

Subshrub or shrub to 4 m high. Indumentum of simple trichomes, ferruginous-tan, entire plant is glabrous unless stated otherwise. Branchlets glossy, fawn-tan, lenticellate with age. Stipules ovate-triangular to triangular, 0.8–2.4 mm long, 0.7–1.8 mm wide, occasionally irregularly crenate. Leaves alternate, subverticillate or subopposite, coriaceous, petiolate; petioles 2–33 mm long, 0.8–1.2 mm wide, olive-green, lenticellate; lamina length/petiole length ratio 3.2–17.7 (n=239); lamina oblanceolate, obovate, rarely elliptic or elliptic-ovate, ± flat, 26–155 mm long, 13–82 mm wide, length/width ratio 1.2–3.3 (n=239); base acute, rarely rounded, often unequal; tip acute or rounded, rarely retuse; midrib above slightly raised (height < 5 times the width), dark green, below strongly raised at lamina base (height < or ± equal to width) then decreasing towards apex, yellow-green; venation brochidodromous, comprising 8–10 lateral veins per side of midrib and intercostal reticulate veins; upper surface dark green and glossy, lateral venation visible, intercostal venation ± obscure; lower surface pale green and glossy, lateral and intercostal venation prominent and slightly raised, 1° and 2° vein orders distinct, 3° vein order indistinct, 4° and onwards vein orders obscure; margin entire, flat to slightly recurved, pale green to yellow-green. Inflorescence an axillary fascicle 1–4 mm diameter, single sex or with both male and female flowers. Male flowers: pedicels filiform, 5–14 mm long, 0.2–0.4 mm diameter; sepals 5, oblong to obovate, 2–5 mm long, 1.2–3 mm wide, densely ciliate in patch at apex; petals absent; disk conspicuous, fleshy, 1–1.5 mm high, 1.5–4 mm diameter, 5-angled; stamens 5, filaments 2–3 mm long, *c.* 0.1 mm diameter, anthers globose-ovoid, *c.* 0.2 mm long and 0.4 mm wide. Female flowers: pedicels filiform, 13–44 mm long, 0.6–1 mm diameter; sepals 5, rarely 6, oblong to obovate, 4.5–6 mm long, 2.5–4.5 mm wide, densely ciliate in patch at apex; petals absent, of if rarely present 1 or 2, spathulate, *c.* 2 mm long and 1 mm wide; disk conspicuous, fleshy, 1–1.8 mm high, 4–6 mm diameter, 5-angled; ovary 2–4.5 mm long, 3.5–5.5 mm diameter; styles 3, simple, shortly connate at base, 0.8–2 mm long, stigmas subcapitate. Fruit: pedicels 13–44 mm long, 0.8–1.2 mm diameter; capsules depressed-globose,

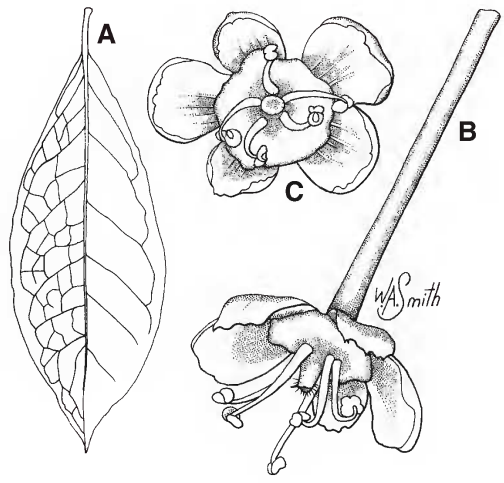

Fig. 12. ***Actephila venusta.*** A. abaxial leaf surface ×0.5. B. side view of male flower ×6. C. face view of male flower ×6. All from *Forster PIF14372* (BRI). Del. W. Smith.

rounded, 8–9 mm long, 12–14 mm diameter, strongly bullate, green to purple-brown; columella 5–6 mm long. Seeds 5–7 mm long, 4–6 mm wide, pale olive green; hilum 1.5–2.5 mm long, caruncle poorly developed, narrow-oblong, 1–2 mm long, 0.2–0.5 mm wide, cream. **Fig. 12.**

***Selected specimens examined*: Northern Territory.** 13 km SW Cape Arnhem, 12° 24'S, 136° 53'E, Feb 1994, *Brennan 2587* (DNA); Marchinbar Island, South Island of Two Island Bay, 11° 04'S, 136° 43'E, Oct 1994, *Brennan 2934* (DNA); Elcho Island, 11° 46'S, 135° 55'E, Dec 1987, *Dunlop 7589* (BRI, DNA, MEL, NSW, QRS); Warangaya, Elcho Island, 11° 56'S, 135° 42'E, Sep 1987, *Russell-Smith 3286 & Lucas* (BRI, DNA); Elcho Island, 14 km SW Naningburra Point, 11° 53'S, 135° 48'E, Dec 1987, *Russell-Smith 4487 & Lucas* (DNA, MEL); NE tip of Elcho Island, 11° 48'S, 135° 56'E, Dec 1987, *Russell-Smith 4498 & Lucas* (BRI, DNA); Gove, Dalywoi Bay, 12° 21'S, 136° 55'E, Feb 1988, *Russell-Smith 4669 & Lucas* (BRI, DNA, NSW, QRS); Elcho Island, 11° 55'S, 135° 50'E, Dec 1987, *Russell-Smith 4518 & Lucas* (BRI, DNA); west bank near mouth of West Alligator River, 12° 15'S, 132° 15'E, May 1978, *Webb & Tracey 12563* (BRI, CANB, DNA). **Queensland.** Cook District: Prince of Wales Island, Torres Strait, 10° 45'S, 142° 15'E, Feb 1975, *Cameron 20132, 20133* (QRS); Pajinka, Cape York, 10° 46'S, 142° 31'E, Feb 2001, *Cooper WWC1479 & Jensen* (BRI, MEL); Mt Bremer, western slopes, 26 km NE of Bamaga, Injinoo custodial land, 10° 42'S, 142° 31'E, Feb 1994, *Fell DGF3922 et al.* (BRI, QRS); Iron Range N.P., 5.8 km SW of Cape Weymouth, 12° 39'S, 143° 23'E, Mar 1994, *Fell DGF4114 & Stanton* (BRI, MEL, QRS); Lake Wicheura, 23 km NE of Bamaga, Injinoo custodial land, 10° 46'S, 142° 33'E, Feb 1994, *Fell DGF4074 & Stanton* (BRI); Muddy Bay, Cape York, 10° 43'S, 142° 33'E, Jun 1994, *Forster PIF15330 & Tucker* (BRI, DNA); Lockerbie Scrub, 10° 47'S, 142° 29'E, Jun 1994, *Forster PIF15334 & Tucker* (BRI, MEL); Mutee Head, Cape York, 10° 54'S, 142° 14'E, Jun 1994, *Forster PIF15352* (BRI, MEL); Turtle Head Is., 10° 56'S, 142° 40'E, May 1995, *Le Cussan 397* (BRI); Yam Island, Torres Strait, 9° 05'S, 142° 46'E, Nov 1999, *Wannan 1486* (BRI).

***Distribution and habitat*:** In Queensland *Actephila venusta* is found from islands in the Torres Strait south to Iron Range. This species is also found in a handful of localities in the Northern Territory (**Map 2**). Plants grow in the understorey of 'dry' rainforests (semi-deciduous to deciduous, complex microphyll to notophyll vineforests) on substrates (alluvial or on ridges) derived from granites, laterised sandstones, metamorphics or sand ridges at altitudes between 30 and 430 m.

***Notes*:** *Actephila venusta* is closely allied to *A. flavescens* and *A. lindleyi* and can be considered a more northerly distributed sister species. Herbarium collections of *A. venusta* have been usually referred to *A. lindleyi*. *Actephila venusta* differs from *A. lindleyi* in the leaf lamina abaxially with 1–2° vein orders distinct (versus 1–3°), the flowers with longer pedicels (male flowers: 5–14 versus 1.5–5 mm; female flowers: 13–44 versus 2–14 mm); sepals that are not cucullate at the apices (versus cucullate); the male flower disk 5-angled (versus rounded) and the female flower disk much larger (1–1.8 × 4–6 mm versus 0.5–1 × 2–4 mm).

Populations of *Actephila venusta* from the driest sites (semi-deciduous microphyll vineforests) in the Northern Territory and western Cape York Peninsula tend to have narrower, more oblanceolate leaves than those from wetter areas (evergreen microphyll to notophyll vineforest) such as at Bamaga.

A probable, undescribed taxon allied to *A. venusta* has been collected in the vicinity of Bathurst Head (Vouchers: 19.5 km ESE of Bathurst Head, Kalpowar Pastoral Holding, 14° 20'S, 144° 21'E, Nov 1992, *Fell DGF2765 & Stanton* (BRI, QRS); 15 km SE of Bathurst Head, 14° 21'S, 144° 17'E, Nov 1992, *Fell DGF2774 & Stanton* (BRI, MEL, QRS); south of Bathurst Bay, 14° 20'S, 144° 20'E, Oct 1970, *Hyland 4841* (BRI, QRS)) where it occurs in 'seasonally dry' rainforest (semi-deciduous complex notophyll vineforest) on granite substrates. These sterile collections differ in the strongly subverticillate foliage with small lamina blades that are about half the length of *A. venusta*.

***Conservation status*:** *Actephila venusta* is widely distributed in areas remote from development. There is no information available on the area of occupancy or the numbers of individuals within populations for this species. *Actephila venusta* is present in Iron Range National Park and is not considered to be threatened.

***Etymology*:** The specific epithet is derived from the Latin word *venustus* (beautiful) and alludes to the flowers of this species.

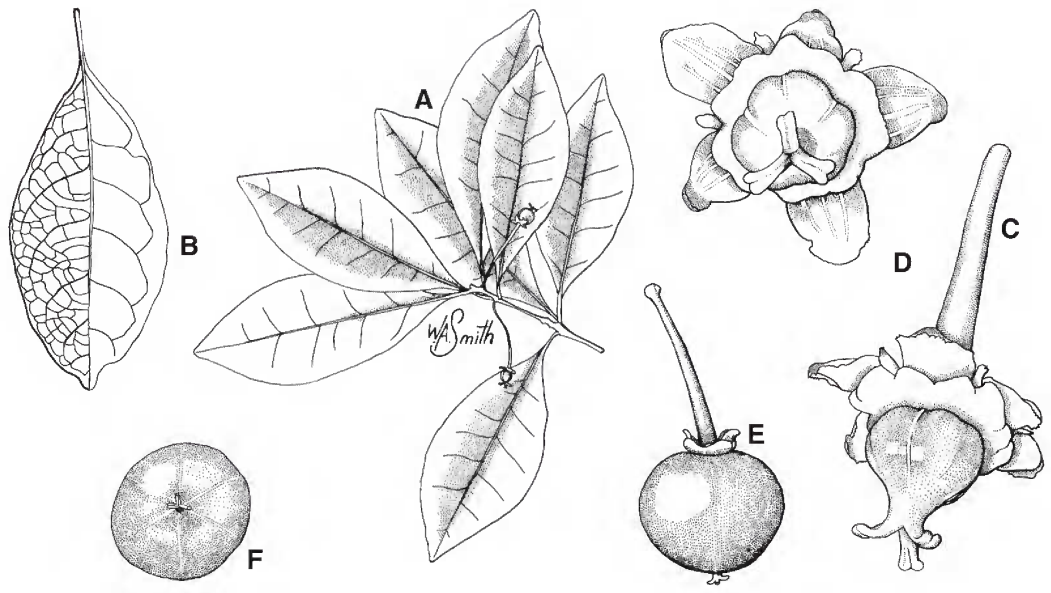

Fig. 13. ***Actephila vernicosa.*** A. habit of flowering branch ×0.5. B. abaxial leaf surface ×0.5. C. side view of female flower ×6. D. face view of flower ×6. E. side view of fruit ×1.5. F. face view of fruit ×1.5. A, B, E, F from *Forster PIF21249* (BRI); C, D from *Cooper WWC1832* (BRI). Del. W. Smith.

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14. Actephila vernicosa P.I.Forst., **sp. nov.** ab *A. lindleyi* (Steud.) Airy Shaw differt stipulis triangularibus usque truncatis (adversum stipulas triangulari-ovatas) quae minores sunt (0.7–1 × 0.5–0.8 mm adversum 1–1.7 × 0.8–1.5 mm), foliis chartaceis (in illa coriaceis) petiolis atroviridibus (non brunneis usque olivaceis), floribus masculis sepalis obtusis usque obovatis (adversum sepala oblonga usque ovata) disco 5-angulato (adversum rotundato) et frutice trilobato (non rotundato).

Typus: Queensland. COOK DISTRICT: Millaa Millaa Falls, 17° 30'S, 145° 36'E, 23 June 1997, *P.I. Forster PIF21249, R. Jensen & M.C. Tucker* (holo: BRI [1 sheet + spirit]; iso: DNA, MEL, NSW).

Actephila sp. (Millaa Millaa RJ 494) (Hyland *et al.* 1999, 2003).

Actephila sp. (Wooroonooran N.P., P.I.Forster PIF17151) (Forster & Henderson 1997: 70; Forster & Halford 2002: 68).

Subshrub or shrub to 3 m high. Indumentum of simple trichomes, translucent, entire plant is glabrous unless stated otherwise. Branchlets glossy, fawn-tan, lenticellate with age. Stipules triangular to truncate, 0.7–1 mm long, 0.5–0.8 mm wide. Leaves alternate or subverticillate, chartaceous, petiolate; petioles 3–8 mm long, 0.8–1 mm wide, black-green, lenticellate; lamina length/petiole length ratio 7.4–16.8 (n=322); lamina elliptic, obovate, oblanceolate, rarely orbicular, ± flat, 20–90 mm long, 11–50 mm wide, length/width ratio 1.3–3.3 (n=322); base attenuate to cuneate; tip acute, obtuse or rounded; midrib above slightly raised (height < 5 times the width), dark green, below strongly raised at lamina base (height < width) then decreasing towards apex, pale yellow-green; venation brochidodromous, comprising 6–9 lateral veins per side of midrib and intercostal reticulate veins; upper surface dark green and glossy, lateral venation visible, intercostal venation ± obscure; lower surface pale green and glossy, lateral and intercostal venation prominent and slightly raised, 1–3° vein orders distinct, 4° and 5° vein orders indistinct, 6° and onwards vein orders obscure; margin entire, flat, pale green. Inflorescence an axillary fascicle 0.5–

1.5 mm diameter, single sex or with both male and female flowers. Male flowers: pedicels filiform, 4–7 mm long, 0.3–0.5 mm diameter; sepals 5, obtuse to obovate, 1.8–2 mm long, 1–1.5 mm wide, ciliate in patches towards apices; petals absent; disk conspicuous, fleshy, *c.* 0.5 mm high, 1.5–2.5 mm diameter, 5-angled; stamens 4 or 5, filaments 1–2 mm long, 0.1–0.2 mm diameter, anthers globose-ovoid, 0.3–0.5 mm long, 0.2–0.4 mm wide. Female flowers: pedicels filiform, 5–25 mm long, 0.5–0.7 mm diameter; sepals 5, obtuse to ovate, 2–2.8 mm long, 1.4–2 mm wide, ciliate in patches towards the apices; petals absent; disk conspicuous, fleshy, 0.8–1 mm high, 3–4.5 mm diameter, 5-angled; ovary 1.5–3.5 mm long, 1.5–3.5 mm diameter; styles 3, simple, shortly connate at base, 0.8–1.8 mm long, stigmas subcapitate. Fruit: pedicels 18–22 mm long, 0.8–2 mm diameter; capsules depressed-globose to subglobose, trilobate, 12–17 mm long, 10–13 mm diameter, strongly bullate, green; columella 5–6 mm long. Seeds 7–8 mm long, 6–7 mm wide, pale tan to olive green; hilum *c.* 2 mm long, caruncle absent. **Fig. 13.**

***Additional specimens examined*: Queensland.** Cook District: Westcott road, Topaz, 17° 24'S, 145° 41'E, May 1993, *Cooper WWC539, 540 & Cooper* (QRS); *loc. cit.*, Nov 1995, *Cooper WWC957 & Cooper* (QRS); *loc. cit.*, Dec 1995, *Cooper WWC958 & Cooper* (QRS); *loc. cit.*, Oct 1996, *Cooper WWC1064 & Cooper* (BRI, QRS); *loc. cit.*, Dec 2003, *Cooper WWC1832 & Cooper* (BRI); Stockwellia Site, Boonjee, 17° 25'S, 145° 45'E, Jun 1995, *Cooper WWC946 & Cooper* (QRS); F.R.185 Robson's L.A., near Danbulla, Mar 1961, *Dansie 2027* (BRI); Danbulla F.R. 185, Aug 1962, *Dansie 2397* (BRI); Scenic Reserve, Millaa Millaa Falls, Sep 1982, *Dansie AFO5219* (QRS); Stockwellia track, Wooroonooran N.P., 17° 22'S, 145° 45'E, Jul 1995, *Forster PIF17151 & Figg* (BRI, MEL); Wooroonooran N.P., Gourka road (old Windin L.A.), 17° 22'S, 145° 42'E, Dec 2003, *Forster PIF29778 & Jensen* (BRI, MEL); Stockwellia track, Boonjee, 17° 23'S, 145° 44'E, Jul 1995, *Hunter JH5287* (BRI); East slopes of Mt Bartle Frere along the Falchetti track to the Mitchell Bomber Crash Site, 17° 22'S, 145° 51'E, Jul 2001, *Jago 6009 & Gandini* (A, BRI, L, MEL, NE, NSW); Millaa Millaa Falls, 17° 30'S, 145° 36'E, Dec 1995, *Jensen 494* (QRS); S.F.R. 185, Maunder L.A., 17° 10'S, 145° 35'E, May 1972, *Nicholson s.n.* (QRS28440); cult. Tolga (ex Boonjee), Apr 1997, *Sankowsky 1558 & Sankowsky* (BRI); *loc. cit.*, Dec 2004, *Sankowsky 2559 & Sankowsky* (BRI); Millaa Millaa Falls, 17° 31'S, 145° 37'E, Feb 1986, *Shapcott s.n.* (BRI [AQ451830]); VCL, Bartle Frere, E of Glen Allyn Trig., Feb 1962, *Webb & Tracey 5799* (BRI).

***Distribution and habitat*:** *Actephila vernicosa* is restricted to a small area bordered by the hamlets or localities of Bartle Frere, Danbulla forestry, Boonjee and Topaz in the 'Wet Tropics' bioregion of north-eastern Queensland (**Map 2**). Plants occur as small shrubs or subshrubs in the understorey of 'wet' rainforest (evergreen, complex notophyll vineforest) on red soil derived from basalt or occasionally from granite, at altitudes between 600 and 800 m.

***Notes*:** *Actephila vernicosa* is an insignificant plant that has been usually misidentified as *A. lindleyi* in herbaria. The population from Millaa Millaa Falls was one of the five populations included in the allozyme study of *A. lindleyi s.l.* by Shapcott (1998) where it was found to be significantly different from the others (now variously identified as *A. grandifolia* and *A. lindleyi*).

Actephila vernicosa is distinctive among the Australian species of the genus in the small, highly glossy, chartaceous leaves and the short blackish-green petioles. It appears to be allied to *A. lindleyi* but differs from that species in the triangular to truncate stipules (versus triangular-ovate) that are smaller (0.7–1 × 0.5–0.8 mm versus 1–1.7 × 0.8–1.5 mm), the chartaceous leaves (versus coriaceous) with black-green petioles (versus brown to olive-green); the male flowers with obtuse to obovate sepals (versus oblong to ovate) and a 5-angled disk (versus rounded); and the trilobate fruit (versus rounded).

***Conservation status*:** *Actephila vernicosa* has a restricted distribution, but is locally common in its known localities. There is no available information as to the area of occupancy or the numbers of individuals within populations. Nearly all populations are present in National Parks (Wooroonooran) or State Forests (S.F. 185 Danbulla) and are not presently under threat.

***Etymology*:** The specific epithet is derived from the Latin word *vernicosus* (varnished) and alludes to the glossy leaves of this species.

Excluded Names

Actephila mearsii C.T.White, *Proc. Royal Soc. Queensland* 50: 85 (1939).

Base name for **Peripentadenia mearsii** (C.T.White) L.S.Sm. (Elaeocarpaceae). *Actephila mearsii* was still listed as a valid species in the genus by Govaerts *et al.* (2000).

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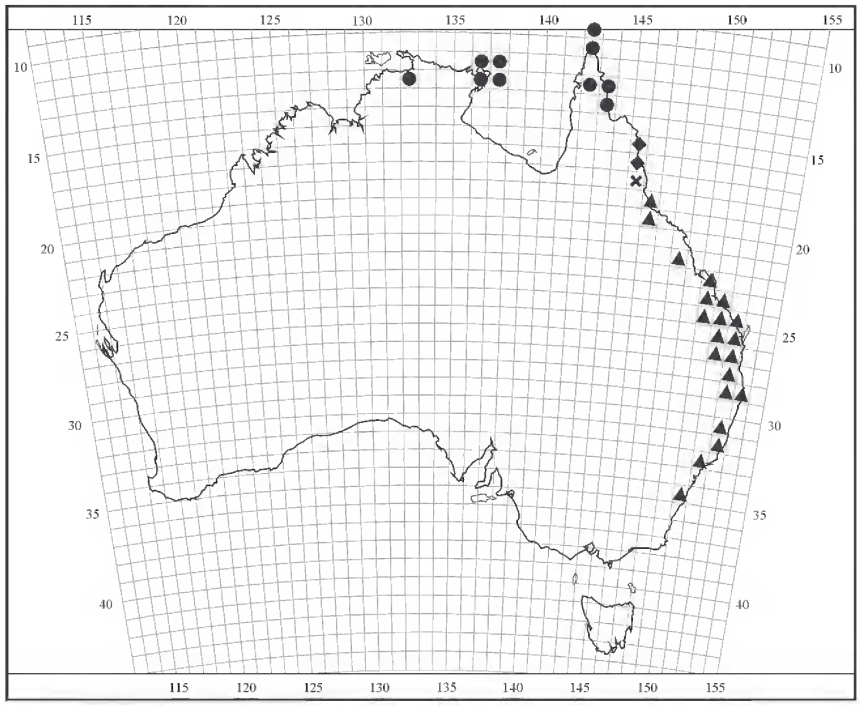
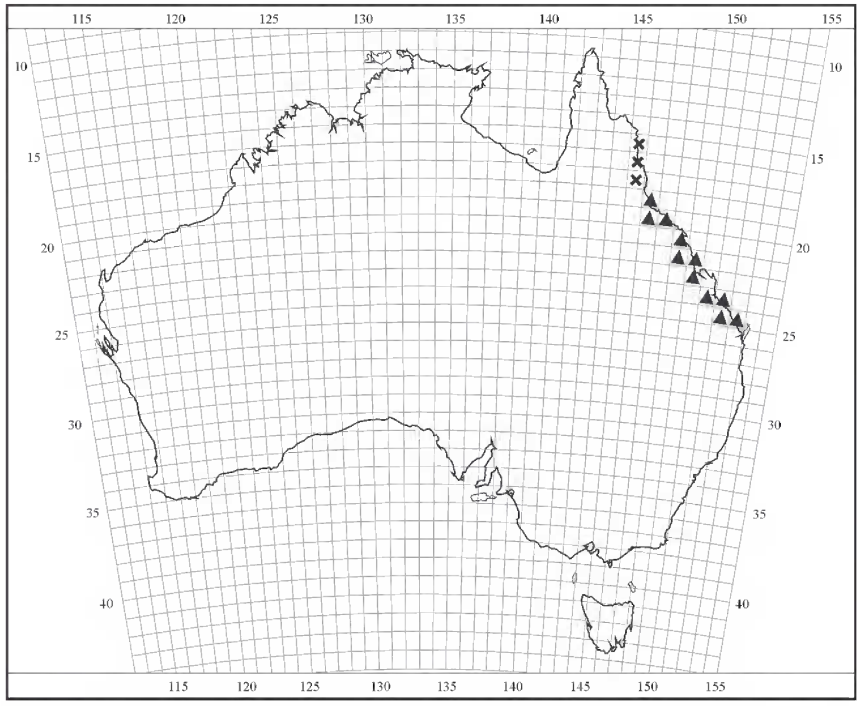
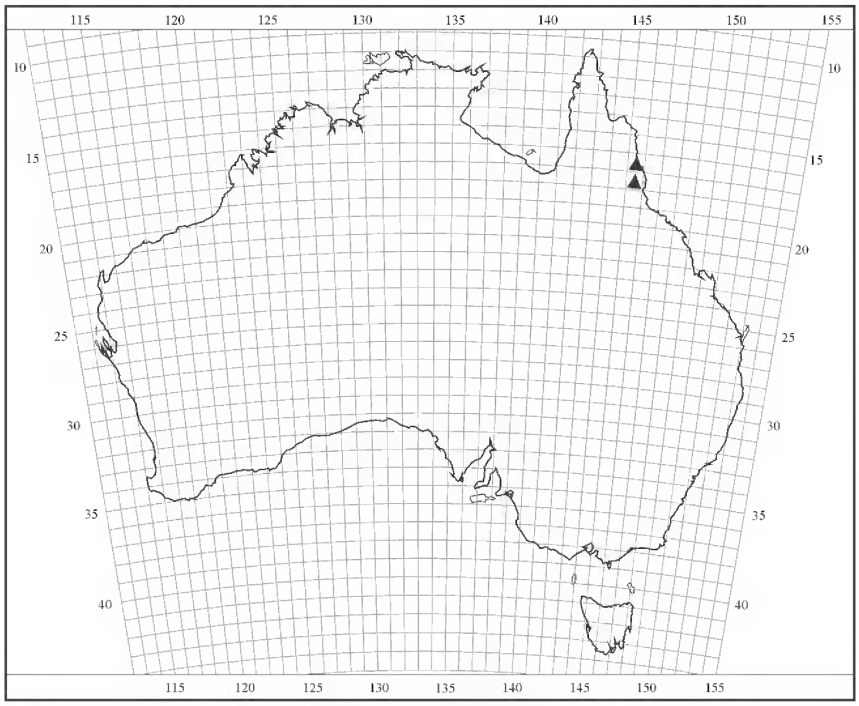


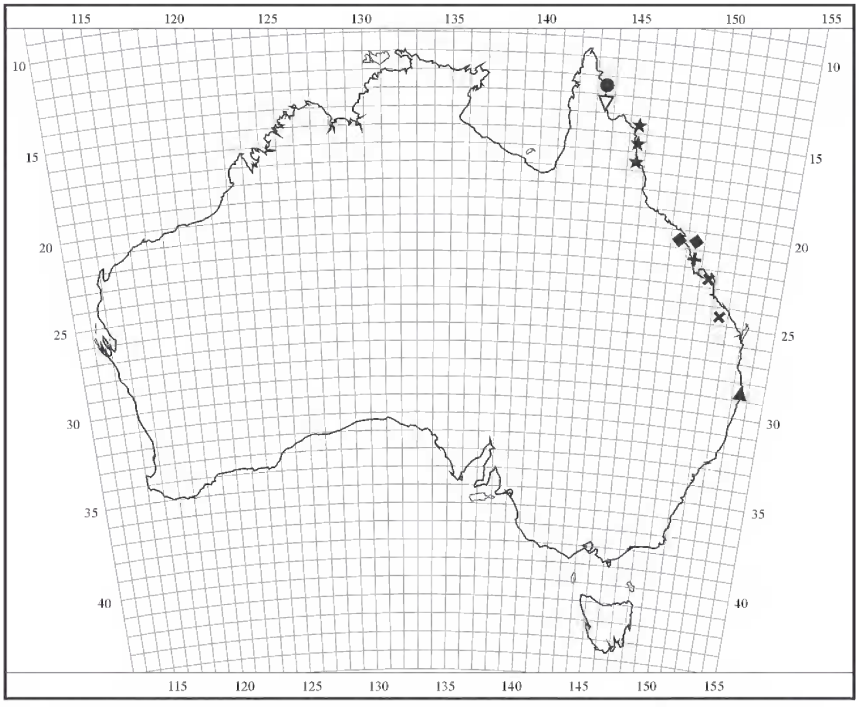
Map 2. Distribution in 1° grids in Australia for *Actephila lindleyi*▲ , *Actephila venusta*● , *Actephila flavescens*◆ , *Actephila vernicosa* ✖ .



Map 3. Distribution in 1° grids in Australia for *Actephila sessilifolia*▲ and *Actephila petiolaris*✖ .



Map 4. Distribution in 1° grids in Australia for *Actephila foetida* ▲ .



Map 5. Distribution in 1° grids in Australia for *Actephila bella* ✖ , *Actephila championiae* ✚ , *Actephila grandifolia* ▲ , *Actephila latifolia* ★ , *Actephila longipedicellata* ● , *Actephila plicata* ◆, *Actephila traceyi* ▽ .